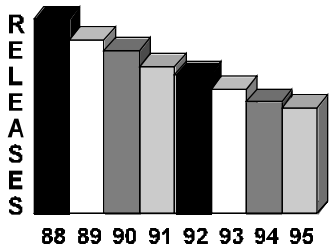
CHAPTER 5: YEAR-TO-YEAR COMPARISONS



Chapter 5

Year-to-Year Comparison of TRI Data

This chapter compares TRI release and transfer data for recent years (1993 to 1995) and the "baseline" reporting year (1988). This chapter also reviews TRI data for chemicals targeted by the 33/50 Program, EPA's initiative for voluntary reductions of releases and transfers, from its baseline year (1988) to its final "target" year (1995). The final section looks at waste management data collected under the Pollution Prevention Act of 1990, from 1991 to 1995. The discussion of the "core" chemical list, in the Introduction below, is important for accurate interpretation of these year-to-year comparisons, particularly because the chemical list was almost doubled for the 1995 reporting year. The newly added chemicals are not included in this chapter because there are no reports for them before 1995.

INTRODUCTION

Because TRI data are collected annually, they can be used to measure the nation's progress in reducing toxic chemical releases and off-site transfers from manufacturing facilities. This chapter attempts to measure such progress on a national, state, industry, and chemical-specific basis.

Tables in this chapter compare 1995 data to 1993 and 1994 data to indicate recent trends, and to the 1988 data to measure progress from the beginning of the TRI program. Although 1987 was the first year for TRI reporting, 1988 has been chosen as the baseline year for comparisons because of concerns about the data quality of industry's submissions in the first year. Most tables include data for 1988 and 1993-1995 only.

Certain TRI reporting requirements have changed since the inception of the program. It is important to understand these changes and consider their implications when comparing TRI data across years.

"Core" Chemicals for Year-to-Year Comparisons

EPA has the authority to add chemicals to the reporting list if they meet the statutory toxicity criteria and to delete chemicals from the list if EPA determines that they do not to meet the toxicity criteria. Since 1987, EPA has deleted a number of chemicals from the list, added others, and modified the reporting requirements for others. The largest expansion has been the chemicals added for the 1995 reporting year, which are not included in this chapter but are highlighted in Chapter 4.

Year-to-year comparisons must be based on a consistent set of chemicals to assure that any changes in total releases or total transfers do not simply reflect the addition, deletion, or change in definition of reportable chemicals from one year to another. Data in this chapter represent facility reporting only for the "core" chemicals for the years being compared. The set of "core" chemicals differs depending on which years are represented in the tables. Tables comparing data for 1994 and 1995 include only those chemicals that were reportable in both those years. Any chemical added for the 1994 reporting year, for example, would be included because it was reportable in both 1994 and 1995. A chemical that was added for 1995 would not appear, because it was reportable only in one of the two years.

Similarly, tables for 1988 to 1995 include only chemicals that were reportable in all years from 1988 through 1995. These tables would not include, for example, chemicals added in 1990, 1991, 1994, or 1995. Also, for 1989, non-fibrous forms of aluminum oxide were removed from the list. Because of this modification, aluminum oxide is not included in any year-to-year comparison that includes the year 1988.

Thus, the chemicals added for the 1995 reporting year do not appear in any of the tables in this chapter, because they are not common to all years being compared. Also, none of the tables include any chemical deleted from the TRI list, regardless of the year it was deleted. As explained below, the reporting definitions for ammonia, hydrochloric acid, and sulfuric acid have changed, and they therefore are also not included in tables in this chapter. Because of this normalization process, done for comparative purposes, release and transfer totals presented for 1995 in this chapter differ from the 1995 totals in Chapter 4.

Reporting of Ammonia, Hydrochloric Acid, and Sulfuric Acid

As described in Box 5-1, reporting requirements for ammonia have changed. Also, ammonium sulfate and ammonium nitrate are no longer individually listed on TRI. The ammonia portion of these chemicals, however, remains on the TRI list, and the nitrates portion of ammonium nitrate is reportable under the newly added nitrate compounds category.

In addition, non-aerosol forms of hydrochloric acid and sulfuric acid have been removed from the list, hydrochloric acid with the 1995 reporting year and sulfuric acid in 1994 (see Box 5-2). This means that only airborne forms of these chemicals count towards the reporting threshold and release calculations, and releases of their non-aerosol forms are no longer reportable. Because of this modification to the reporting requirements, these chemicals are not included in any year-to-year comparisons in this chapter.

An Explanation of the Modification to the Reporting Requirements for Aqueous Ammonia and the Delisting of Ammonium Sulfate (Solution) and Ammonium Nitrate (Solution)

On June 30, 1995, EPA finalized four actions in response to a petition to delete ammonium sulfate (solution) from the list of toxic chemicals subject to reporting under EPCRA Section 313: (1) deleted the sulfate portion of ammonium sulfate (solution) from the list of toxic chemicals and made the ammonia portion reportable under the ammonia listing, (2) required that threshold and release determinations for aqueous ammonia be based on 10% of the total aqueous ammonia present in aqueous solutions of ammonia, (3) modified the ammonia listing by adding this qualifier: "ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10% of total aqueous ammonia is reportable under this listing)," and (4) removed the specific listing for ammonium nitrate (solution), although the ammonia portion is still reportable under the ammonia listing and, as discussed below, ammonium nitrate is also reportable under the nitrate compounds category. All actions were effective for the 1994 reporting year (reports due July 1, 1995), except for deletion of the specific listing for ammonium nitrate (solution), which became effective with the 1995 reporting year (reports due July 1, 1996).

In previous years, there was a great deal of confusion as to what should be reported under the ammonia listing, specifically over the sources of aqueous ammonia that must be included and how aqueous ammonia should be reported. Modifying the ammonia listing by adding the above qualifier should result in more consistent and accurate reporting under this listing since it clarifies what is reportable. The requirement to report only 10% of total aqueous ammonia under the ammonia listing takes into account the fact that one form of ammonia is relatively more toxic to aquatic organisms and that under many environmental conditions this form makes up no more than 10% of total aqueous ammonia. The 10% reporting limit for aqueous ammonia means that some facilities will no longer meet reporting thresholds and that the pounds of aqueous ammonia reported as released and transferred from the facilities that do report may be lower. It is important to remember that the 10% reporting limit only applies to aqueous ammonia; anhydrous ammonia is still 100% reportable.

Although ammonium sulfate (solution) has been deleted from the list, the aqueous ammonia from this chemical is still reportable under the ammonia listing. To determine the amount of aqueous ammonia from ammonium sulfate (solution) that should be added to the aqueous ammonia totals, the amount of ammonium sulfate (solution) is multiplied by 0.026. This represents 10% of the total aqueous ammonia present in ammonium sulfate (solution) since ammonia (as NH_3) makes up 26% of ammonium sulfate.

The removal of the ammonium nitrate (solution) listing is reflected in this public data release. Like ammonium sulfate (solution), the aqueous ammonia from ammonium nitrate (solution) is reportable under the ammonia listing. To determine the amount of aqueous ammonia from ammonium nitrate (solution) that should be added to the aqueous ammonia totals, the amount of ammonium nitrate (solution) is multiplied by 0.021. This represents 10% of the total aqueous ammonia present in ammonium nitrate (solution) since ammonia (as NH_3) makes up 21% of ammonium nitrate. In addition, ammonium nitrate is also reportable under the nitrate compounds category, which was added for the 1995 reporting year. Although this chemical is reportable under two listings, no double reporting of releases or transfers occurs since under the nitrate compounds category only the weight of the nitrate ion is included in calculations of releases and transfers.

To determine the quantity of total aqueous ammonia released to surface water, land, or underground injection, data users must multiply the reported quantity by 10. For example, to make use of the quantities reported for aqueous ammonia in any analysis of releases to surface waters, the reported amounts must be converted to total aqueous ammonia values. This is necessary in order to take into account site specific conditions of pH and temperature which determine the amount of total ammonia that will be present in the more aquatically toxic form. To convert the reported aqueous ammonia values to total ammonia, simply multiply amounts by 10.

Box 5-1. An Explanation of the Modification to the Reporting Requirements for Aqueous Ammonia and the Delisting of Ammonium Sulfate (Solution) and Ammonium Nitrate (Solution).

An Explanation of the Modification to the Reporting Requirements for Hydrochloric and Sulfuric Acid

On June 30, 1995, EPA finalized a modification to the listing for sulfuric acid and on July 25, 1996, EPA finalized the same modification to the listing for hydrochloric acid. These two chemical listings were modified by the addition of the following qualifier: "(acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)." The modification to sulfuric acid was effective for the 1994 reporting year and the modification to hydrochloric acid was effective for the 1995 reporting year. EPA made these modifications in response to petitions to delist the non-aerosol forms of these chemicals. EPA determined that the non-aerosol forms did not meet the listing criteria of EPCRA Section 313(d) and therefore granted the petitions. These modifications mean that facilities are no longer required to report releases and transfers of non-aerosol forms of sulfuric and hydrochloric acid under EPCRA Section 313.

These changes in the reporting requirements for sulfuric and hydrochloric acid are reflected in the large reductions in reported releases and transfers of these chemicals. Most of these reductions result from the fact that solutions of these chemicals that do not become airborne are exempt from reporting. Thus there are large reductions in the amounts released, particularly quantities discharged to surface waters and injected underground and in amounts reported for most types of transfers. Since airborne forms are still covered by these listings, reported fugitive or nonpoint air emissions have not changed as much as other types of releases, and there has been little change in the stack or point air emission totals. In addition to lower reported releases and transfers, some facilities may no longer exceed reporting thresholds for the aerosol forms only and thus may not have to file a report.

Box 5-2. An Explanation of the Modification to the Reporting Requirements for Hydrochloric and Sulfuric Acid.

Threshold Changes

Facilities are required to report for a particular chemical only if they meet the manufacture, process, or otherwise use thresholds for that chemical. The "otherwise use" threshold has remained 10,000 pounds since the inception of the program. However, the manufacture and process thresholds began at 75,000 pounds for 1987, dropped to 50,000 pounds for 1988, and dropped again to 25,000 pounds for 1989 and thereafter. Due in part to these declining thresholds, the number of facilities reporting to TRI and the number of forms filed increased from 1987 to 1988 and again from 1988 to 1989. These threshold changes may have impacted the TRI data between 1988 and 1989, but would not affect data after 1989.

Effective in 1995, facilities whose "total annual reportable amount" for a reportable chemical does not exceed 500 pounds can submit "certification" forms (Form As) instead of Form Rs (if they do not manufacture, process, or use more than 1 million pounds of the chemical). Form As identify the facility and chemical, but do not supply any amounts of release, transfer, or waste management. In prior years, such facilities were required to report such amounts, and totals for 1988-1994 include their submissions. Of the forms submitted in 1995, more than 5,000 are Form As, which do not provide release, transfer, or waste management amounts. Thus, some portion of any decrease in reported amounts from 1994 or earlier years would be attributable to the 1995 submission of these "certification" forms.

New Transfer Types

Beginning with the 1991 reporting year, facilities were required to report transfers off-site for

Table 5-1. Comparison of TRI Releases and Transfers, 1994-1995.[1]

	1994 Number	1995 Number	1994-1995 Change Number	1994-1995 Change Percent
Total Facilities	20,976	20,244	-732	-3.5
Form Rs	64,491	57,218		
Form As		5,288		
Total Forms	64,491	62,506	-1,985	-3.1
	Pounds	Pounds	Pounds	Percent
Total Air Emissions	1,300,741,903	1,211,967,750	-88,774,153	-6.8
Fugitive Air	366,537,611	318,693,435	-47,844,176	-13.1
Point Source Air	934,204,292	893,274,315	-40,929,977	-4.4
Surface Water	40,040,531	35,945,515	-4,095,016	-10.2
Underground Injection	125,777,282	150,243,903	24,466,621	19.5
Releases to Land	282,950,878	265,956,693	-16,994,185	-6.0
Total Releases	1,749,510,594	1,664,113,861	-85,396,733	-4.9
Transfers to Recycling	2,170,295,400	2,142,948,293	-27,347,107	-1.3
Transfers to Energy Recovery	456,830,378	487,069,564	30,239,186	6.6
Transfers to Treatment	220,963,750	239,684,106	18,720,356	8.5
Transfers to POTWs	160,082,277	156,683,871	-3,398,406	-2.1
Transfers to Disposal	266,074,072	260,661,888	-5,412,184	-2.0
Other Off-site Transfers[2]	3,421,533	2,222,813	-1,198,720	-35.0
Total Transfers	3,277,667,410	3,289,270,535	11,603,125	0.4
Total Releases and Transfers	5,027,178,004	4,953,384,396	-73,793,608	-1.5

the purposes of recycling and energy recovery to TRI. Prior to 1991, facilities were required to report only transfers to POTWs and other off-site locations for the purposes of treatment and disposal.

Because of this change in the reporting requirements, total transfers for 1988 are not comparable to total transfers for 1991 and beyond. Comparisons between 1988 and 1995 transfers in this chapter include only those transfer types that were reportable in 1988. Comparisons between 1994 and 1995 transfers include all transfer types reportable for 1991 and beyond.

TRI Releases and Transfers, 1994-1995 and 1988-1995

NATIONAL OVERVIEW

Total Releases

Reported releases of toxic chemicals to the environment decreased by 85.4 million pounds from 1994 to 1995, from 1.75 billion pounds to 1.66 billion pounds (see Table 5-1). This represents a decline of 4.9%. The greatest reduction occurred in reported air emissions (88.8 million pounds, or a 6.8% decrease). Discharges to surface water decreased 4.1 million pounds (a

[1] Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid.
[2] Transfers reported with no waste management codes or invalid codes.

Table 5-2. Comparison of TRI Releases and Transfers, 1988, 1993-1995.[3]

	1988 Number	1993 Number	1994 Number	1995 Number	1988-1995 Change Number	1988-1995 Change Percent
Total Facilities	20,412	21,260	20,697	19,968	-444	-2.2
Form Rs	62,638	64,477	62,923	55,751	—	—
Form As	—	—	—	5,179	—	—
Total Forms	62,638	64,477	62,923	60,930	-1,708	-2.7
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
Total Air Emissions	2,176,711,749	1,317,366,483	1,263,917,460	1,172,650,647	-1,004,061,102	-46.1
Fugitive Air	679,933,826	375,914,140	349,634,925	302,209,786	-377,724,040	-55.6
Point Source Air	1,496,777,923	941,452,343	914,282,535	870,440,861	-626,337,062	-41.9
Surface Water	164,466,515	194,863,841	39,974,880	35,794,255	-128,672,260	-78.2
Underground Injection	161,939,132	113,289,640	114,170,231	136,751,624	-25,187,508	-15.6
Releases to Land	459,231,827	268,040,133	282,797,978	265,251,632	-193,980,195	-42.2
Total Releases	2,962,349,223	1,893,560,097	1,700,860,549	1,610,448,158	-1,351,901,065	-45.6
Transfers to Recycling[4]	NA	1,937,016,457	2,168,766,870	2,141,325,371	NA	NA
Transfers to Energy Recovery[4]	NA	444,763,451	455,461,086	485,656,459	NA	NA
Transfers to Treatment	369,160,080	208,231,555	217,216,579	235,231,411	-133,928,669	-36.3
Transfers to POTWs	254,722,925	163,233,454	158,464,603	154,661,990	-100,060,935	-39.3
Transfers to Disposal	386,183,255	250,671,071	259,376,987	254,785,189	-131,398,066	-34.0
Other Off-site Transfers[5]	42,859,210	2,359,906	3,421,283	2,221,798	-40,637,412	—
Total Transfers	1,052,925,470	3,006,275,894	3,262,707,408	3,273,882,218	—	—
Total Releases and Transfers	4,015,274,693	4,899,835,991	4,963,567,957	4,884,330,376	—	—

10.2% decline) and releases to land decreased 17.0 million pounds (6.0%). Among reported releases, only underground injection increased, by 24.5 million pounds or 19.5%. Table 5-1 compares the 1995 TRI data to the 1994 data.

From 1988 to 1995, total releases decreased by 1.35 billion pounds, a 45.6% decline. Table 5-2 compares the 1995 TRI data to the 1988 data, and Figure 5-1 shows the distribution by media of TRI releases for the period.

Total Transfers

Reported transfers of TRI chemicals to off-site locations increased by 11.6 million pounds from 1994 to 1995, from 3.28 billion pounds to 3.29 billion pounds (see Table 5-1). This represents an increase of just 0.4%. Transfers to energy recovery increased 30.2 million pounds (6.6% increase) and transfers to treatment increased 18.7 million pounds (8.5%). All other transfer categories decreased, with the largest reduction occurring in transfers to recycling (27.3 million pounds, a 1.3% decrease).

Because transfers to recycling and energy recovery were not reportable in 1988, total transfers for 1995 cannot be compared to total transfers for 1988. However, transfers to POTWs and other off-site locations for the purposes of treatment and disposal have declined 36.2% since 1988 (see Table 5-2).

[3] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[4] NA: Transfers for recyling or energy recovery were not required to be reported for 1988.

[5] For 1993, 1994, and 1995, transfers reported with no waste management codes or invalid codes. For 1988, transfers reported with no waste management codes, invalid codes, or codes not required to be reported in 1988.

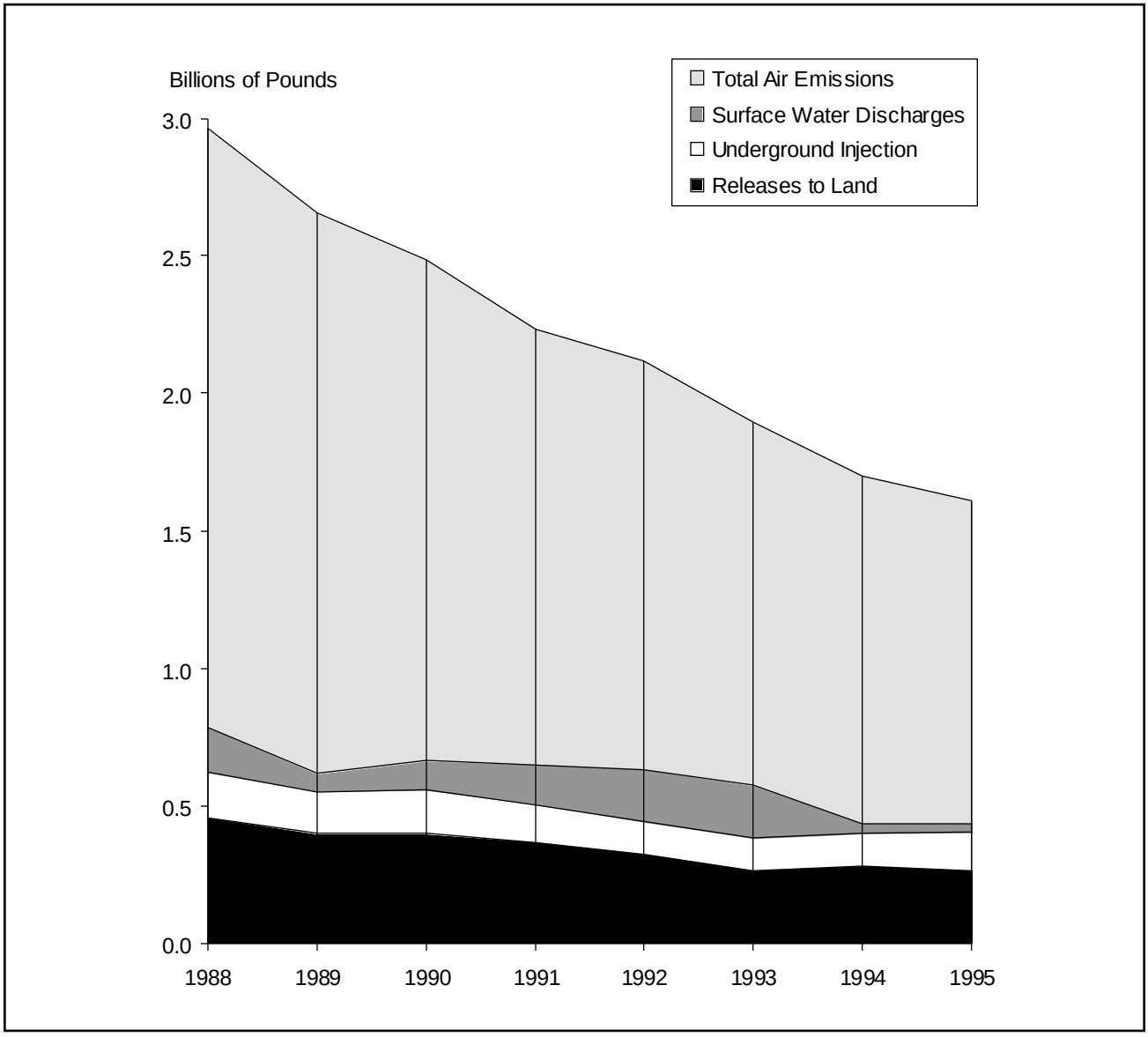


Figure 5-1. Distribution of TRI Releases, 1988-1995.[6]

[6] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

Facilities and Forms

The number of facilities reporting to TRI dropped 3.5% from 1994 to 1995, from 20,976 to 20,244. The number of individual chemical reports dropped 3.1%, from 64,491 in 1994 to 62,506 in 1995. However, the number of facilities and forms for 1995 will probably rise somewhat over time due to late reporting and to resolution of outstanding data quality problems that may have prevented data entry of some submissions prior to the preparation of this report. Form As, described above, accounted for 8.5% of total forms in 1995, the first year in which facilities could submit these "certification" forms.

The total number of facilities and forms increased from 1988 to 1989, probably as a result of the changes in reporting thresholds described earlier in this chapter, but has steadily decreased since 1989.

STATES, INDUSTRIES, AND CHEMICAL-SPECIFIC DATA, 1988-1995

Change in Releases and Transfers by State

Table 5-3 compares the total TRI releases reported by each state for 1988 through 1995. The five states with the largest reported decrease in total TRI releases were Louisiana (122.2 million-pound reduction), Texas (114.5 million pounds), Indiana (98.1 million pounds), Virginia (70.5 million pounds), and California (64.0 million pounds).

In Louisiana, facilities reported total releases in 1995 (for the 1988-1995 "core" chemicals) at half the 1988 level (a 50.5% decrease). The greatest reduction, in amount and percentage, occurred in surface water discharges, a decrease of 105.6 million pounds or 83.3%. At the same time, Louisiana air emissions decreased 9.5 million pounds (15.0%) and underground injection 10.0 million pounds (20.0%). Reported land releases increased 2.9 million pounds; although these constitute a smaller portion of Louisiana releases than those to the other environmental media, the increase represents a 179.9% rise in this release category.

Air emissions reported by facilities in Texas decreased by 83.7 million pounds from 1988 to 1995, a 44.7% reduction. A 1.0 million-pound reduction in reported discharges to water amounts to a 60.3% reduction over that period. Underground injection reported by Texas facilities decreased 8.8 million pounds (10.9%), and the greatest proportional reduction reported occurred in releases to land, 63.5% (21.0 million pounds). Overall, the reduction in total releases reported by Texas facilities was 37.8%.

Twenty-three states and territories reported decreases in total releases of more than 50% between 1988 and 1995, led by Wyoming and New Hampshire, with reductions in percentage terms of 93.4% and 85.0% respectively. Only five have reported net increases in total TRI releases since 1988.

Table 5-4 presents the complete release and transfer information for each state for 1988 and 1993-1995. No reports were received from the Northern Mariana Islands for any year 1988-1995. None were received from the District of Columbia for any year 1990-1993. One facility from Guam has reported for 1995, the first TRI report received from that territory.

Table 5-3. Change in Total TRI Releases by State, 1988-1995 (Alphabetically Ordered).[7]

State	Total Releases				1988-1995 Change	
	1988 Pounds	1993 Pounds	1994 Pounds	1995 Pounds	Pounds	Percent
Alabama	103,599,893	90,151,172	84,092,824	88,802,962	-14,796,931	-14.3
Alaska	3,712,819	2,104,493	1,095,396	2,158,114	-1,554,705	-41.9
American Samoa	0	23	0	0	0	—
Arizona	65,699,311	11,812,922	30,504,005	33,525,416	-32,173,895	-49.0
Arkansas	35,987,952	23,852,659	27,567,713	22,862,823	-13,125,129	-36.5
California	90,478,535	41,417,295	33,852,471	26,460,474	-64,018,061	-70.8
Colorado	13,221,685	3,957,533	3,726,264	3,190,475	-10,031,210	-75.9
Connecticut	32,536,246	12,393,486	10,062,413	7,200,777	-25,335,469	-77.9
Delaware	6,924,983	3,913,563	3,642,211	2,822,092	-4,102,891	-59.2
District of Columbia	500	0	28,560	29,715	29,215	5,843.0
Florida	59,369,659	45,793,613	70,222,531	50,666,292	-8,703,367	-14.7
Georgia	67,891,794	36,393,920	41,139,626	36,502,845	-31,388,949	-46.2
Guam	0	0	0	3,100	3,100	—
Hawaii	834,123	499,239	514,100	398,260	-435,863	-52.3
Idaho	7,283,355	1,870,323	2,393,056	2,625,053	-4,658,302	-64.0
Illinois	107,659,215	69,935,058	71,706,953	67,396,357	-40,262,858	-37.4
Indiana	160,767,042	78,980,446	65,018,808	62,656,884	-98,110,158	-61.0
Iowa	38,598,050	22,571,799	21,081,118	19,184,243	-19,413,807	-50.3
Kansas	28,563,881	16,636,005	15,842,883	14,581,654	-13,982,227	-49.0
Kentucky	49,698,427	30,869,606	29,578,103	28,012,507	-21,685,920	-43.6
Louisiana	241,889,333	263,610,591	113,098,235	119,732,974	-122,156,359	-50.5
Maine	14,672,506	8,075,897	6,054,578	5,821,027	-8,851,479	-60.3
Maryland	17,996,265	10,333,346	10,611,407	10,106,093	-7,890,172	-43.8
Massachusetts	26,064,998	10,044,953	8,581,150	6,937,443	-19,127,555	-73.4
Michigan	94,915,332	71,909,712	75,923,919	54,148,328	-40,767,004	-43.0
Minnesota	54,342,570	22,077,776	19,588,770	16,770,614	-37,571,956	-69.1
Mississippi	54,595,247	42,545,684	41,332,445	38,177,624	-16,417,623	-30.1
Missouri	85,228,646	47,556,978	44,175,837	39,813,067	-45,415,579	-53.3
Montana	35,586,989	44,484,931	46,348,366	42,614,633	7,027,644	19.7
Nebraska	13,509,608	9,497,593	7,989,214	7,303,056	-6,206,552	-45.9
Nevada	2,288,491	2,945,830	3,001,993	3,175,316	886,825	38.8
New Hampshire	12,278,806	3,185,449	2,234,516	1,839,896	-10,438,910	-85.0
New Jersey	36,330,577	14,069,708	12,541,482	10,882,363	-25,448,214	-70.0
New Mexico	30,245,502	22,937,543	17,131,923	17,869,074	-12,376,428	-40.9
New York	87,704,342	33,468,014	29,393,607	25,618,013	-62,086,329	-70.8
North Carolina	121,477,166	76,500,916	77,887,739	69,164,473	-52,312,693	-43.1
North Dakota	1,129,649	918,489	976,657	1,182,826	53,177	4.7
Ohio	157,019,795	95,508,200	90,805,502	94,077,919	-62,941,876	-40.1
Oklahoma	28,263,478	14,963,888	12,719,248	12,861,539	-15,401,939	-54.5
Oregon	17,835,785	13,984,679	15,833,372	17,746,258	-89,527	-0.5
Pennsylvania	97,146,898	43,981,709	44,628,335	40,236,506	-56,910,392	-58.6
Puerto Rico	12,669,091	10,453,269	9,072,804	8,369,812	-4,299,279	-33.9
Rhode Island	6,321,238	3,381,757	3,025,809	2,555,888	-3,765,350	-59.6
South Carolina	60,583,799	44,669,577	42,442,439	44,180,079	-16,403,720	-27.1
South Dakota	2,312,072	1,891,118	1,998,430	1,757,384	-554,688	-24.0
Tennessee	115,217,602	95,015,198	87,015,769	88,367,796	-26,849,806	-23.3
Texas	302,813,440	197,100,523	187,318,681	188,295,905	-114,517,535	-37.8
Utah	123,311,329	84,202,339	65,671,221	68,621,600	-54,689,729	-44.4
Vermont	1,594,192	616,425	607,470	510,623	-1,083,569	-68.0
Virgin Islands	1,847,998	1,579,195	960,560	1,185,940	-662,058	-35.8
Virginia	109,749,707	43,668,940	42,088,497	39,247,564	-70,502,143	-64.2
Washington	25,876,891	16,707,296	19,863,073	20,958,755	-4,918,136	-19.0
West Virginia	31,330,757	18,492,909	17,898,330	15,861,485	-15,469,272	-49.4
Wisconsin	48,632,514	29,233,006	29,095,397	24,266,128	-24,366,386	-50.1
Wyoming	16,739,140	793,504	874,739	1,110,114	-15,629,026	-93.4
Total	2,962,349,223	1,893,560,097	1,700,860,549	1,610,448,158	-1,351,901,065	-45.6

[7] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

Table 5-4. TRI Releases and Transfers by State, 1988, 1993-1995 (Alphabetically Ordered).[8]

State	Year	Facilities Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
Alabama	95	467	79,861,644	1,737,869	16	7,203,433	88,802,962
	94	477	78,915,188	1,425,786	251	3,751,599	84,092,824
	93	466	83,121,454	2,974,402	145,613	3,909,703	90,151,172
	88	370	97,235,270	872,926	1,734,717	3,756,980	103,599,893
Alaska	95	9	745,164	929,268	38	483,644	2,158,114
	94	13	272,595	820,450	35	2,316	1,095,396
	93	8	1,239,626	863,050	42	1,775	2,104,493
	88	6	1,575,689	2,134,652	1,018	1,460	3,712,819
American Samoa	94	1	0	0	0	0	0
	93	2	18	5	0	0	23
	88	1	0	0	0	0	0
Arizona	95	167	5,009,036	4,463	14	28,511,903	33,525,416
	94	170	5,349,033	39	11	25,154,922	30,504,005
	93	171	3,992,843	47	18	7,820,014	11,812,922
	88	163	12,529,106	2,250	0	53,167,955	65,699,311
Arkansas	95	344	18,863,478	325,226	2,360,926	1,313,193	22,862,823
	94	363	20,919,043	196,332	4,549,764	1,902,574	27,567,713
	93	359	20,290,092	194,476	1,127,981	2,240,110	23,852,659
	88	309	30,269,758	272,891	3,530,506	1,914,797	35,987,952
California	95	1,283	24,262,463	1,429,758	339,770	428,483	26,460,474
	94	1,396	29,253,339	3,776,119	331,592	491,421	33,852,471
	93	1,527	34,782,397	2,505,164	3,621,884	507,850	41,417,295
	88	1,719	79,687,023	9,059,819	76,653	1,655,040	90,478,535
Colorado	95	154	3,084,406	16,449	0	89,620	3,190,475
	94	161	3,558,117	21,147	0	147,000	3,726,264
	93	158	3,727,051	27,321	500	202,661	3,957,533
	88	167	10,604,763	14,686	1,000	2,601,236	13,221,685
Connecticut	95	300	6,092,675	1,012,992	0	95,110	7,200,777
	94	323	8,082,641	1,875,191	0	104,581	10,062,413
	93	353	10,125,381	1,793,966	0	474,139	12,393,486
	88	424	25,336,026	5,598,378	250	1,601,592	32,536,246
Delaware	95	62	2,773,890	34,098	0	14,104	2,822,092
	94	61	3,435,805	37,277	0	169,129	3,642,211
	93	65	3,669,326	69,990	0	174,247	3,913,563
	88	57	6,391,842	293,377	0	239,764	6,924,983
District of Columbia	95	3	10,460	255	0	19,000	29,715
	94	5	9,660	1,600	0	17,300	28,560
	88	1	250	250	0	0	500
Florida	95	477	23,290,254	197,513	2,379,394	24,799,131	50,666,292
	94	474	23,148,132	197,964	2,098,058	44,778,377	70,222,531
	93	461	19,651,472	56,502	1,221,816	24,863,823	45,793,613
	88	458	27,793,876	809,409	540,466	30,225,908	59,369,659
Georgia	95	648	34,388,061	620,332	0	1,494,452	36,502,845
	94	649	38,887,327	794,509	0	1,457,790	41,139,626
	93	668	34,165,317	960,345	0	1,268,258	36,393,920
	88	589	66,556,291	599,796	59,467	676,240	67,891,794

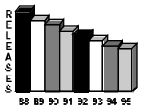


Table 5-4.

State	Year	Transfers to Recycling[9] Pounds	Transfers to Energy Recovery[9] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[10] Pounds	Total Transfers[11] Pounds
Alabama	95	33,113,096	13,985,336	5,633,611	237,702	12,208,279	2,320	65,180,344
	94	32,785,657	13,753,869	3,123,093	188,316	12,554,288	12,054	62,417,277
	93	28,176,947	11,552,312	6,971,782	204,596	13,429,666	0	60,335,303
	88	NA	NA	8,166,981	828,434	6,089,721	152,341	NA
Alaska	95	1,320	10	30	0	6,030	0	7,390
	94	353,880	0	112,075	1,265	0	1,450	468,670
	93	450,043	0	2,364	20	20	0	452,447
	88	NA	NA	0	1,000	1,750	0	NA
American Samoa	94	0	0	0	0	0	0	0
	93	0	0	7	0	0	0	7
	88	NA	NA	0	0	0	0	NA
Arizona	95	50,230,912	735,051	4,793,045	748,822	428,773	0	56,936,603
	94	36,793,607	663,103	1,714,915	261,485	278,717	0	39,711,827
	93	46,124,532	557,905	1,608,781	253,055	198,267	0	48,742,540
	88	NA	NA	982,495	319,046	537,011	4,300	NA
Arkansas	95	54,967,460	6,617,500	1,658,305	39,580	1,546,061	3,428	64,832,334
	94	73,717,601	5,607,087	1,278,825	65,243	1,740,126	150	82,409,032
	93	43,869,766	5,503,557	1,168,429	47,952	1,026,204	5	51,615,913
	88	NA	NA	2,247,808	654,666	5,081,158	286,634	NA
California	95	74,667,184	8,828,682	10,328,967	8,870,941	8,850,521	10,763	111,557,058
	94	62,651,665	7,590,077	5,172,497	8,210,526	8,362,918	13,045	92,000,728
	93	64,979,118	8,269,240	3,689,202	10,817,063	9,084,157	1,320	96,840,100
	88	NA	NA	13,245,908	7,335,336	18,824,146	4,011,443	NA
Colorado	95	11,285,610	3,370,752	1,036,894	180,138	270,725	250	16,144,369
	94	10,874,631	3,542,445	1,653,222	197,078	312,109	17,882	16,597,367
	93	9,517,638	2,265,882	3,425,217	252,125	393,060	4,050	15,857,972
	88	NA	NA	2,258,631	343,192	2,514,194	76,836	NA
Connecticut	95	24,901,814	2,363,710	6,343,521	659,352	976,985	2,140	35,247,522
	94	24,242,682	2,038,982	5,611,646	553,045	868,096	710	33,315,161
	93	23,746,535	3,906,431	5,728,862	532,167	871,264	926	34,786,185
	88	NA	NA	9,470,292	1,898,977	5,263,312	327,917	NA
Delaware	95	16,974,700	2,394,162	724,148	2,472,929	94,065	0	22,660,004
	94	13,264,644	2,287,856	723,859	2,779,774	465,469	0	19,521,602
	93	15,054,760	422,921	898,958	2,907,097	124,632	0	19,408,368
	88	NA	NA	943,512	2,732,712	1,710,169	19,894	NA
District of Columbia	95	13,250	0	0	580	27,000	0	40,830
	94	33,155	0	0	113,832	27,000	0	173,987
	88	NA	NA	250	250	0	0	NA
Florida	95	12,508,671	1,630,638	2,623,664	5,944,827	1,172,860	14,055	23,894,715
	94	17,095,753	2,098,490	2,140,110	3,479,964	966,415	202,007	25,982,739
	93	17,386,601	3,039,480	2,197,199	8,806,240	1,319,282	173,320	32,922,122
	88	NA	NA	5,765,350	15,421,725	1,639,540	1,550,157	NA
Georgia	95	31,289,551	7,624,996	3,174,459	1,428,141	2,802,507	1,755	46,321,409
	94	45,354,985	7,835,427	2,549,727	1,156,875	2,509,185	323	59,406,522
	93	48,551,887	6,627,237	2,092,043	2,258,695	2,606,480	504	62,136,846
	88	NA	NA	8,212,597	6,314,692	19,036,045	1,131,143	NA

Table 5-4. TRI Releases and Transfers by State, 1988, 1993-1995 (Alphabetically Ordered),[8] Continued.

State	Year	Facilities Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
Guam	95	1	0	3,100	0	0	3,100
Hawaii	95	12	396,696	1,260	9	295	398,260
	94	14	509,572	1,250	773	2,505	514,100
	93	15	496,199	1,000	280	1,760	499,239
	88	23	716,773	2,500	12,300	102,550	834,123
Idaho	95	51	1,838,198	291,590	0	495,265	2,625,053
	94	52	1,550,290	19,704	0	823,062	2,393,056
	93	51	1,330,114	11,993	0	528,216	1,870,323
	88	46	3,060,774	31,450	0	4,191,131	7,283,355
Illinois	95	1,217	44,749,168	168,204	260	22,478,725	67,396,357
	94	1,254	50,964,319	121,146	4,399	20,617,089	71,706,953
	93	1,279	50,030,615	162,111	2,053	19,740,279	69,935,058
	88	1,243	95,716,841	503,835	72,044	11,366,495	107,659,215
Indiana	95	940	55,677,073	196,542	3,398	6,779,871	62,656,884
	94	971	62,407,182	219,826	129,906	2,261,894	65,018,808
	93	973	65,758,597	452,951	76,116	12,692,782	78,980,446
	88	801	98,712,993	1,874,738	261,899	59,917,412	160,767,042
Iowa	95	364	17,801,070	11,414	0	1,371,759	19,184,243
	94	374	19,615,985	18,542	0	1,446,591	21,081,118
	93	380	20,381,764	21,869	0	2,168,166	22,571,799
	88	351	37,801,113	164,451	5	632,481	38,598,050
Kansas	95	255	12,615,156	15,096	1,150,779	800,623	14,581,654
	94	259	14,799,078	12,005	733,374	298,426	15,842,883
	93	263	15,418,702	36,872	973,662	206,769	16,636,005
	88	209	26,236,226	31,871	2,206,210	89,574	28,563,881
Kentucky	95	382	26,905,509	318,624	0	788,374	28,012,507
	94	387	28,518,730	249,463	0	809,910	29,578,103
	93	398	29,689,572	167,533	0	1,012,501	30,869,606
	88	327	43,982,175	271,197	250	5,444,805	49,698,427
Louisiana	95	275	54,097,351	21,096,571	39,964,674	4,574,378	119,732,974
	94	275	56,638,077	20,452,257	32,046,965	3,960,936	113,098,235
	93	267	50,255,157	176,937,323	32,690,828	3,727,283	263,610,591
	88	263	63,628,088	126,661,808	49,965,239	1,634,198	241,889,333
Maine	95	80	5,259,582	246,591	0	314,854	5,821,027
	94	90	5,019,220	396,718	0	638,640	6,054,578
	93	92	6,173,776	543,656	0	1,358,465	8,075,897
	88	95	13,351,437	379,127	3,000	938,942	14,672,506
Maryland	95	170	7,218,716	404,931	0	2,482,446	10,106,093
	94	172	7,931,537	391,751	500	2,287,619	10,611,407
	93	168	7,856,158	271,362	0	2,205,826	10,333,346
	88	178	15,814,891	347,596	2	1,833,776	17,996,265
Massachusetts	95	462	6,900,624	8,188	0	28,631	6,937,443
	94	490	8,553,464	7,020	0	20,666	8,581,150
	93	524	9,967,496	25,538	0	51,919	10,044,953
	88	617	25,906,069	44,548	0	114,381	26,064,998

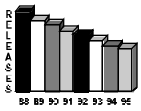


Table 5-4, Cont.

State	Year	Transfers to Recycling[9] Pounds	Transfers to Energy Recovery[9] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[10] Pounds	Total Transfers[11] Pounds
Guam	95	0	0	0	15,000	0	0	15,000
Hawaii	95	113,272	5	7,599	0	163,269	0	284,145
	94	45,146	6,220	4,820	5,000	17,371	5,000	83,557
	93	39,148	0	790	5,000	14,982	0	59,920
	88	NA	NA	0	3,250	13,682	0	NA
Idaho	95	354,954	52,471	70,385	214,185	17,066	0	709,061
	94	423,532	56,534	103,511	214,572	12,730	0	810,879
	93	318,850	151,454	45,275	249,221	4,217	0	769,017
	88	NA	NA	16,069	352,627	65,184	750	NA
Illinois	95	96,328,512	30,441,222	8,862,884	5,785,126	15,323,135	1,516	156,742,395
	94	91,510,849	29,993,856	13,293,304	7,570,153	16,113,096	3,930	158,485,188
	93	79,516,587	33,302,967	14,150,126	8,303,852	15,918,435	22,844	151,214,811
	88	NA	NA	23,146,126	10,626,399	26,028,188	3,585,157	NA
Indiana	95	197,009,438	11,259,189	9,391,074	924,902	24,388,934	2,605	242,976,142
	94	189,104,444	13,171,231	9,021,449	1,824,369	16,343,013	504	229,465,010
	93	160,155,354	15,309,092	9,797,343	877,604	13,910,912	750	200,051,055
	88	NA	NA	18,789,342	4,897,670	23,522,567	884,000	NA
Iowa	95	36,910,546	4,368,441	1,760,900	7,180,538	1,820,938	0	52,041,363
	94	31,379,618	5,112,603	1,332,538	6,958,341	1,627,112	7,817	46,418,029
	93	20,539,402	4,430,847	1,741,712	6,370,830	878,150	778,250	34,739,191
	88	NA	NA	1,046,465	5,660,214	4,429,821	201,088	NA
Kansas	95	40,431,627	2,417,625	848,327	173,808	3,149,670	250	47,021,307
	94	44,919,177	2,454,669	1,296,479	566,987	1,480,267	0	50,717,579
	93	38,493,365	1,983,402	1,326,146	668,667	2,208,844	200	44,680,624
	88	NA	NA	1,849,215	951,814	1,698,713	171,596	NA
Kentucky	95	49,618,957	7,539,913	8,630,141	1,018,569	2,454,950	86,004	69,348,534
	94	53,984,981	6,862,113	5,109,726	1,012,215	2,930,329	500	69,899,864
	93	48,451,758	7,607,306	5,613,910	1,200,117	2,604,565	510	65,478,166
	88	NA	NA	13,654,218	1,763,720	16,745,323	1,479,156	NA
Louisiana	95	52,439,798	11,172,003	6,155,765	29,653	1,855,160	0	71,652,379
	94	50,755,045	7,064,795	4,720,024	336,109	1,721,957	0	64,597,930
	93	43,746,605	9,788,035	5,105,078	136,749	1,458,649	0	60,235,116
	88	NA	NA	3,247,073	3,511,253	8,954,347	184,152	NA
Maine	95	2,685,904	461,856	296,274	163,553	1,325,276	0	4,932,863
	94	2,802,353	476,418	229,550	221,365	805,518	0	4,535,204
	93	3,030,202	576,075	229,619	169,651	177,715	0	4,183,262
	88	NA	NA	292,808	326,942	725,978	30,883	NA
Maryland	95	9,001,118	1,549,667	1,780,458	2,947,392	1,824,756	0	17,103,391
	94	7,443,139	1,072,056	1,512,093	2,707,695	906,467	206,000	13,847,450
	93	23,040,970	2,214,534	1,328,706	3,428,375	316,615	0	30,329,200
	88	NA	NA	2,695,253	3,256,115	2,003,710	95,866	NA
Massachusetts	95	26,119,394	5,856,944	5,246,375	3,576,205	1,222,708	1,005	42,022,631
	94	26,383,693	6,216,677	5,120,946	3,606,999	1,340,778	10	42,669,103
	93	19,858,681	6,240,413	3,844,857	4,120,045	1,177,198	22,629	35,263,823
	88	NA	NA	11,657,247	7,068,410	5,812,015	941,002	NA

Table 5-4. TRI Releases and Transfers by State, 1988, 1993-1995 (Alphabetically Ordered),[8] Continued.

State	Year	Facilities Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
Michigan	95	816	43,814,836	522,095	6,425,841	3,385,556	54,148,328
	94	862	59,025,222	790,973	6,800,848	9,306,876	75,923,919
	93	887	58,617,762	470,889	4,236,189	8,584,872	71,909,712
	88	853	84,691,787	960,445	3,857,040	5,406,060	94,915,332
Minnesota	95	460	16,109,654	170,772	0	490,188	16,770,614
	94	463	18,483,591	154,732	0	950,447	19,588,770
	93	478	20,053,635	46,693	48	1,977,400	22,077,776
	88	399	51,259,515	360,607	0	2,722,448	54,342,570
Mississippi	95	279	33,641,623	290,119	82,001	4,163,881	38,177,624
	94	290	36,246,794	278,111	32,511	4,775,029	41,332,445
	93	282	37,400,645	541,034	52,146	4,551,859	42,545,684
	88	244	44,612,029	693,142	2,506,563	6,783,513	54,595,247
Missouri	95	517	25,371,075	92,782	0	14,349,210	39,813,067
	94	535	27,796,137	28,816	0	16,350,884	44,175,837
	93	553	29,589,606	56,700	0	17,910,672	47,556,978
	88	505	45,749,497	97,688	500	39,380,961	85,228,646
Montana	95	22	3,119,934	84,518	0	39,410,181	42,614,633
	94	19	2,786,780	77,797	0	43,483,789	46,348,366
	93	19	1,865,788	12,747	0	42,606,396	44,484,931
	88	22	2,777,629	33,014	0	32,776,346	35,586,989
Nebraska	95	143	7,038,325	15,347	0	249,384	7,303,056
	94	142	7,655,277	17,876	0	316,061	7,989,214
	93	150	9,213,832	21,964	0	261,797	9,497,593
	88	133	13,401,751	91,450	0	16,407	13,509,608
Nevada	95	32	967,435	0	0	2,207,881	3,175,316
	94	36	700,965	0	0	2,301,028	3,001,993
	93	35	527,549	0	0	2,418,281	2,945,830
	88	30	584,289	250	0	1,703,952	2,288,491
New Hampshire	95	93	1,812,061	16,880	0	10,955	1,839,896
	94	97	2,188,536	34,482	5	11,493	2,234,516
	93	107	3,121,274	55,639	0	8,536	3,185,449
	88	146	11,861,069	36,122	0	381,615	12,278,806
New Jersey	95	554	10,596,524	67,827	5	218,007	10,882,363
	94	609	12,265,981	97,114	5	178,382	12,541,482
	93	638	13,323,964	102,669	0	643,075	14,069,708
	88	805	32,517,408	954,495	2,950	2,855,724	36,330,577
New Mexico	95	36	1,088,764	1,095	0	16,779,215	17,869,074
	94	42	1,191,300	1,923	0	15,938,700	17,131,923
	93	39	958,418	4,374	0	21,974,751	22,937,543
	88	30	1,415,615	255	0	28,829,632	30,245,502
New York	95	661	23,975,236	449,833	5	1,192,939	25,618,013
	94	702	27,059,594	691,318	71,760	1,570,935	29,393,607
	93	778	31,350,111	993,547	5	1,124,351	33,468,014
	88	882	83,331,163	1,377,790	250	2,995,139	87,704,342
North Carolina	95	788	51,189,371	310,320	0	17,664,782	69,164,473
	94	827	57,806,913	601,370	0	19,479,456	77,887,739
	93	866	58,802,152	340,465	0	17,358,299	76,500,916
	88	823	105,577,996	383,664	0	15,515,506	121,477,166

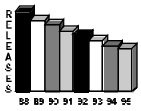


Table 5-4, Cont.

State	Year	Transfers to Recycling[9] Pounds	Transfers to Energy Recovery[9] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[10] Pounds	Total Transfers[11] Pounds
Michigan	95	107,914,382	63,885,660	16,182,818	8,884,836	29,150,664	750	226,019,110
	94	119,173,680	69,713,534	15,216,097	9,172,268	26,857,306	423,534	240,556,419
	93	94,992,405	60,869,612	11,255,579	7,311,045	26,907,996	3,500	201,340,137
	88	NA	NA	23,335,297	6,946,824	37,741,143	6,288,627	NA
Minnesota	95	20,611,575	2,532,777	825,696	5,093,222	1,397,153	0	30,460,423
	94	18,177,158	2,624,935	1,109,585	5,782,898	1,127,650	0	28,822,226
	93	14,989,443	4,779,212	1,168,747	3,761,140	595,585	0	25,294,127
	88	NA	NA	3,666,506	3,875,892	1,603,383	11,611	NA
Mississippi	95	30,392,474	3,268,317	1,957,529	493,239	1,008,294	1,852,705	38,972,558
	94	28,756,735	3,528,216	1,970,776	675,238	1,347,776	5,772	36,284,513
	93	25,623,300	3,750,464	770,780	588,913	1,085,639	4,200	31,823,296
	88	NA	NA	3,537,904	1,018,461	3,460,867	447,895	NA
Missouri	95	57,133,509	25,236,776	8,641,869	1,803,526	3,186,189	6,800	96,008,669
	94	60,962,276	17,306,559	14,604,175	1,640,810	5,074,254	51,886	99,639,960
	93	45,200,662	7,973,727	17,049,560	2,486,500	3,714,412	4,905	76,429,766
	88	NA	NA	5,512,307	4,841,830	5,475,315	2,034,835	NA
Montana	95	139,551	20,407	33,327	922	29,091	0	223,298
	94	2,406,947	43,953	7,871	633	111,198	0	2,570,602
	93	1,941,469	73,105	10,595	2,522	58,019	0	2,085,710
	88	NA	NA	4,456	1,312	42,914	0	NA
Nebraska	95	31,001,468	644,035	184,149	76,090	3,614,166	0	35,519,908
	94	45,004,245	680,536	233,272	248,881	5,719,320	0	51,886,254
	93	23,409,392	756,959	169,520	225,126	3,818,943	260	28,380,200
	88	NA	NA	428,699	268,587	3,426,302	25,850	NA
Nevada	95	2,016,251	6,736	2,669	7,537	54,323	0	2,087,516
	94	378,351	5,950	7,899	9,049	67,203	0	468,452
	93	414,092	4,579	17,275	7,029	78,090	0	521,065
	88	NA	NA	387,825	2,555	63,875	0	NA
New Hampshire	95	9,737,478	352,889	349,879	60,491	78,702	0	10,579,439
	94	9,571,264	323,433	367,967	136,640	139,822	12,168	10,551,294
	93	7,585,470	279,391	397,433	129,055	454,224	120,322	8,965,895
	88	NA	NA	1,436,130	137,177	1,585,084	479,009	NA
New Jersey	95	46,502,091	30,454,969	7,089,450	20,481,481	1,163,705	6,696	105,698,392
	94	58,358,462	28,391,994	11,020,507	25,053,188	1,891,178	22,180	124,737,509
	93	55,420,037	24,832,468	8,663,489	28,156,377	2,246,500	19,028	119,337,899
	88	NA	NA	26,325,834	44,607,453	8,628,793	2,604,430	NA
New Mexico	95	147,934	208,739	60,847	190,618	76,690	0	684,828
	94	165,476	147,016	102,505	318,994	98,515	0	832,506
	93	410,078	159,210	76,833	232,631	34,369	0	913,121
	88	NA	NA	67,790	23,006	140,617	0	NA
New York	95	73,953,536	10,642,557	4,541,766	5,508,500	4,256,586	5	98,902,950
	94	80,608,721	8,228,400	6,128,522	5,257,825	8,105,380	500	108,329,348
	93	78,490,855	6,264,611	5,774,509	5,120,333	5,609,539	18,673	101,278,520
	88	NA	NA	16,717,302	11,845,305	11,951,795	566,237	NA
North Carolina	95	95,057,806	10,348,627	11,273,272	1,501,451	2,496,632	12,649	120,690,437
	94	96,936,636	7,673,167	11,651,384	1,571,897	2,677,412	5	120,510,501
	93	96,428,839	9,463,795	6,942,526	1,552,065	5,291,196	263	119,678,684
	88	NA	NA	7,665,038	3,716,056	10,397,355	426,813	NA

Table 5-4. TRI Releases and Transfers by State, 1988, 1993-1995 (Alphabetically Ordered),[8] Continued.

State	Year	Facilities Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
North Dakota	95	28	1,182,266	35	0	525	1,182,826
	94	32	976,119	23	0	515	976,657
	93	31	917,443	514	0	532	918,489
	88	28	1,096,294	93	0	33,262	1,129,649
Ohio	95	1,511	51,685,449	565,034	11,728,468	30,098,968	94,077,919
	94	1,577	60,441,893	602,694	8,180,911	21,580,004	90,805,502
	93	1,589	66,347,222	548,301	8,643,789	19,968,888	95,508,200
	88	1,471	113,933,259	1,135,587	11,538,548	30,412,401	157,019,795
Oklahoma	95	250	12,172,317	112,896	10,238	566,088	12,861,539
	94	260	12,290,361	14,222	11,591	403,074	12,719,248
	93	248	11,836,908	66,279	20,243	3,040,458	14,963,888
	88	204	26,802,341	122,968	129,574	1,208,595	28,263,478
Oregon	95	232	16,077,446	135,179	0	1,533,633	17,746,258
	94	235	15,159,934	217,156	0	456,282	15,833,372
	93	241	12,231,115	258,763	0	1,494,801	13,984,679
	88	206	16,960,203	122,478	1	753,103	17,835,785
Pennsylvania	95	1,122	38,463,845	312,845	0	1,459,816	40,236,506
	94	1,153	42,418,171	378,440	0	1,831,724	44,628,335
	93	1,180	42,396,506	419,873	750	1,164,580	43,981,709
	88	1,086	78,986,016	1,476,265	750	16,683,867	97,146,898
Puerto Rico	95	145	8,363,794	5,739	0	279	8,369,812
	94	144	9,065,749	7,030	4	21	9,072,804
	93	157	10,445,987	2,115	0	5,167	10,453,269
	88	166	12,506,666	60,099	0	102,326	12,669,091
Rhode Island	95	132	2,549,493	6,355	0	40	2,555,888
	94	136	3,024,931	808	0	70	3,025,809
	93	148	3,360,687	21,070	0	0	3,381,757
	88	180	6,234,656	58,245	0	28,337	6,321,238
South Carolina	95	468	42,934,512	556,611	0	688,956	44,180,079
	94	460	41,148,047	586,699	0	707,693	42,442,439
	93	453	43,546,553	553,559	0	569,465	44,669,577
	88	370	58,814,380	660,905	0	1,108,514	60,583,799
South Dakota	95	68	1,756,742	255	0	387	1,757,384
	94	64	1,815,126	3,205	0	180,099	1,998,430
	93	65	1,718,626	18	0	172,474	1,891,118
	88	49	2,311,821	0	0	251	2,312,072
Tennessee	95	600	82,150,641	493,222	464,635	5,259,298	88,367,796
	94	624	80,640,499	565,568	465,257	5,344,445	87,015,769
	93	647	87,773,099	351,358	652,761	6,237,980	95,015,198
	88	528	96,071,901	997,817	4,651,370	13,496,514	115,217,602
Texas	95	1,090	103,758,611	644,951	71,820,532	12,071,811	188,295,905
	94	1,111	113,333,669	2,096,947	58,696,885	13,191,180	187,318,681
	93	1,129	121,732,720	553,642	59,787,029	15,027,132	197,100,523
	88	1,073	187,442,801	1,623,083	80,645,941	33,101,615	302,813,440
Utah	95	133	61,743,615	14,244	0	6,863,741	68,621,600
	94	146	55,427,834	7,184	0	10,236,203	65,671,221
	93	139	72,767,408	6,804	0	11,428,127	84,202,339
	88	111	111,024,208	129,355	0	12,157,766	123,311,329

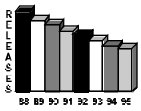


Table 5-4, Cont.

State	Year	Transfers to Recycling[9] Pounds	Transfers to Energy Recovery[9] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[10] Pounds	Total Transfers[11] Pounds
North Dakota	95	1,134,677	23,517	19,541	99,265	23,796	0	1,300,796
	94	419,059	13,640	93,975	198,863	11,281	0	736,818
	93	228,707	44,377	61,618	166,136	3,753	0	504,591
	88	NA	NA	79,047	25,503	65,740	0	NA
Ohio	95	216,265,215	37,518,026	15,518,873	6,126,040	27,800,596	130,065	303,358,815
	94	212,143,842	37,142,312	14,753,581	6,404,262	25,153,934	39,282	295,637,213
	93	187,418,037	28,206,001	16,094,119	8,823,846	19,842,838	45,300	260,430,141
	88	NA	NA	31,506,305	14,350,786	45,125,180	5,514,278	NA
Oklahoma	95	20,225,560	3,016,517	750,446	131,733	3,195,079	0	27,319,335
	94	22,574,665	2,129,568	962,043	130,381	2,624,266	0	28,420,923
	93	21,218,460	2,435,335	970,299	116,511	2,788,308	1,500	27,530,413
	88	NA	NA	2,236,246	196,062	4,630,413	260,835	NA
Oregon	95	19,861,332	814,662	4,498,666	8,853,790	750,762	22,190	34,801,402
	94	21,889,919	637,338	568,515	8,897,573	804,264	0	32,797,609
	93	18,093,280	495,308	632,956	4,152,633	927,639	0	24,301,816
	88	NA	NA	1,198,323	6,659,424	3,726,630	12,879	NA
Pennsylvania	95	136,151,297	15,849,434	16,735,663	5,481,771	55,501,821	11,265	229,731,251
	94	139,794,459	18,268,873	14,545,929	6,027,911	50,593,048	2,260,855	231,491,075
	93	127,245,502	20,594,893	14,358,985	7,441,139	61,004,658	1,016,364	231,661,541
	88	NA	NA	32,962,308	9,994,734	37,705,453	617,453	NA
Puerto Rico	95	11,728,018	9,940,114	5,503,442	2,141,942	293,071	0	29,606,587
	94	10,166,282	9,576,195	5,401,514	2,713,030	309,925	0	28,166,946
	93	14,568,758	7,243,621	3,850,084	2,307,612	347,428	250	28,317,753
	88	NA	NA	4,316,025	3,010,002	159,616	26,200	NA
Rhode Island	95	14,113,477	742,596	477,683	152,473	450,151	250	15,936,630
	94	15,021,756	494,435	475,522	178,962	3,761,723	0	19,932,398
	93	11,082,281	437,143	503,444	318,078	2,634,796	5	14,975,747
	88	NA	NA	1,362,984	1,389,200	1,391,330	18,608	NA
South Carolina	95	95,232,658	10,428,742	5,403,612	2,978,922	3,392,111	0	117,436,045
	94	89,506,884	9,961,587	5,482,393	2,943,242	4,675,017	0	112,569,123
	93	105,857,669	8,976,616	6,221,572	1,986,725	2,832,956	0	125,875,538
	88	NA	NA	4,723,939	2,373,012	5,303,221	5,973,334	NA
South Dakota	95	676,169	158,306	67,930	229,792	78,644	0	1,210,841
	94	680,330	99,166	37,362	251,356	73,398	0	1,141,612
	93	408,714	213,793	46,057	123,531	46,899	0	838,994
	88	NA	NA	193,764	147,289	81,170	250	NA
Tennessee	95	57,993,160	5,748,358	4,699,598	3,642,101	8,145,454	29,216	80,257,887
	94	54,167,484	8,047,741	2,200,660	4,333,831	17,536,561	750	86,287,027
	93	41,981,686	8,023,287	2,650,614	4,869,028	8,534,093	434	66,059,142
	88	NA	NA	5,840,735	8,423,559	11,268,603	204,066	NA
Texas	95	127,494,023	91,908,515	34,597,879	23,915,532	11,821,861	23,116	289,760,926
	94	127,687,127	74,843,579	25,174,826	19,546,387	12,201,457	132,339	259,585,715
	93	112,338,466	82,107,084	19,903,763	17,714,907	12,549,272	28,208	244,641,700
	88	NA	NA	38,157,084	35,446,732	15,666,534	1,348,728	NA
Utah	95	5,686,866	97,386	524,843	228,340	493,592	0	7,031,027
	94	6,095,263	131,727	835,049	192,601	1,503,716	250	8,758,606
	93	4,704,123	191,252	650,393	275,031	6,929,119	0	12,749,918
	88	NA	NA	1,196,431	500,379	524,357	19,437	NA

Table 5-4. TRI Releases and Transfers by State, 1988, 1993-1995 (Alphabetically Ordered),[8] Continued.

State	Year	Facilities Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
Vermont	95	34	507,937	12	0	2,674	510,623
	94	32	606,960	250	0	260	607,470
	93	39	615,915	250	0	260	616,425
	88	52	1,481,893	87,958	0	24,341	1,594,192
Virgin Islands	95	2	1,178,528	4,951	0	2,461	1,185,940
	94	3	891,291	10,766	0	58,503	960,560
	93	3	1,549,886	4,076	0	25,233	1,579,195
	88	1	1,705,156	2,500	0	140,342	1,847,998
Virginia	95	407	37,954,387	122,943	0	1,170,234	39,247,564
	94	421	40,933,113	130,489	0	1,024,895	42,088,497
	93	430	41,215,374	197,990	0	2,255,576	43,668,940
	88	411	103,155,176	398,818	1,373	6,194,340	109,749,707
Washington	95	263	19,816,354	1,112,133	0	30,268	20,958,755
	94	276	18,764,523	1,006,732	0	91,818	19,863,073
	93	281	16,068,937	605,199	0	33,160	16,707,296
	88	305	24,838,321	816,208	0	222,362	25,876,891
West Virginia	95	129	15,238,247	350,885	250	272,103	15,861,485
	94	139	17,237,990	324,654	301	335,385	17,898,330
	93	145	17,818,346	371,130	11	303,422	18,492,909
	88	114	28,992,387	1,524,178	0	814,192	31,330,757
Wisconsin	95	809	23,476,576	263,428	5	526,119	24,266,128
	94	807	27,342,866	210,569	1	1,541,961	29,095,397
	93	833	27,391,917	178,605	0	1,662,484	29,233,006
	88	750	41,821,434	281,131	250	6,529,699	48,632,514
Wyoming	95	21	1,074,375	615	20,366	14,758	1,110,114
	94	22	852,960	836	14,524	6,419	874,739
	93	22	683,971	98	35,876	73,559	793,504
	88	18	1,845,814	8,350	138,996	14,745,980	16,739,140
Total	95	19,968	1,172,650,647	35,794,255	136,751,624	265,251,632	1,610,448,158
	94	20,697	1,263,917,460	39,974,880	114,170,231	282,797,978	1,700,860,549
	93	21,260	1,317,366,483	194,863,841	113,289,640	268,040,133	1,893,560,097
	88	20,412	2,176,711,749	164,466,515	161,939,132	459,231,827	2,962,349,223

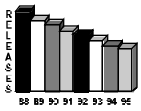


Table 5-4, Cont.

State	Year	Transfers to Recycling[9] Pounds	Transfers to Energy Recovery[9] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[10] Pounds	Total Transfers[11] Pounds
Vermont	95	1,633,551	19,461	292,141	3,789	28,396	0	1,977,338
	94	1,240,337	120,690	231,780	4,041	24,156	0	1,621,004
	93	3,978,943	177,002	290,264	16,323	22,787	0	4,485,319
	88	NA	NA	557,825	69,411	140,261	5,227	NA
Virgin Islands	95	122,698	51,700	191,134	0	5	0	365,537
	94	42,563	47,629	414,075	0	77	0	504,344
	93	682,955	125	7,261	0	1	0	690,342
	88	NA	NA	0	0	0	0	NA
Virginia	95	33,690,851	7,627,332	1,265,532	10,555,024	1,856,592	0	54,995,331
	94	27,953,744	8,804,743	1,450,040	11,409,134	1,729,210	250	51,347,121
	93	25,795,639	6,840,955	2,259,068	10,364,582	1,688,618	0	46,948,862
	88	NA	NA	4,457,362	11,061,791	2,633,796	52,544	NA
Washington	95	13,546,169	668,870	511,748	147,573	587,573	0	15,461,933
	94	11,766,871	812,179	407,076	404,220	654,742	120	14,045,208
	93	11,261,847	604,995	757,426	337,625	843,288	0	13,805,181
	88	NA	NA	3,707,617	296,730	2,396,199	214,952	NA
West Virginia	95	35,542,453	11,011,986	3,846,287	1,758,285	3,325,376	0	55,484,387
	94	30,717,217	10,707,872	3,835,907	1,464,975	2,791,813	0	49,517,784
	93	17,067,791	15,081,097	5,733,267	1,094,929	2,437,925	250	41,415,259
	88	NA	NA	10,638,845	2,603,684	8,081,514	1,000	NA
Wisconsin	95	54,584,807	19,756,663	9,814,612	1,501,738	8,590,806	0	94,248,626
	94	60,414,512	17,047,488	12,097,273	1,459,787	10,323,139	10	101,342,209
	93	53,057,520	20,130,315	9,959,100	1,942,678	9,582,871	91,136	94,763,620
	88	NA	NA	9,125,410	6,621,475	12,067,740	569,797	NA
Wyoming	95	67,247	1,612	1,684	24	7,640	0	78,207
	94	64,368	2,123	4,090	4,518	5,285	0	80,384
	93	71,288	4,029	18,013	283	35,996	0	129,609
	88	NA	NA	127,102	250	1,481	0	NA
Total	95	2,141,325,371	485,656,459	235,231,411	154,661,990	254,785,189	2,221,798	3,273,882,218
	94	2,168,766,870	455,461,086	217,216,579	158,464,603	259,376,987	3,421,283	3,262,707,408
	93	1,937,016,457	444,763,451	208,231,555	163,233,454	250,671,071	2,359,906	3,006,275,894
	88	NA	NA	369,160,080	254,722,925	386,183,255	42,859,210	NA

[8] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[9] NA: Transfers for recycling or energy recovery were not required to be reported for 1988.

[10] For 1993, 1994, and 1995, transfers reported with no waste management codes or invalid codes. For 1988, transfers reported with no waste management codes, invalid codes, or codes not required to be reported in 1988.

[11] Because transfers for recycling or energy recovery were not required to be reported in 1988, total transfers in 1988 are not comparable to total transfers reported for 1993, 1994, or 1995.

Change in Releases and Transfers by Industry

From 1988 to 1995, all industry groups except apparel manufacturing reported net decreases in TRI releases for the "core" set of chemicals, as shown on Table 5-5. The chemicals industry, reporting more total TRI releases in 1995 than any other industry group, has also posted the greatest reductions: a net decrease of 487.8 million pounds since 1988, or 49.8%. Ranking second for total releases, the primary metals industry similarly ranks second for reductions, with facilities reporting 180.0 million pounds less in total releases in 1995 than in 1988, a 38.2% decrease. Both industries have reported their greatest reductions in air emissions: a 308.7 million-pound reduction (52.9% decrease) for the chemical industry and a 99.6 million-pound reduction (48.4%) for primary metals.

Seven industry groups, plus facilities that report multiple SIC codes, report reductions of half or more of total releases since 1988. They are led by the electrical equipment industry (79.7%), leather goods manufacturers (77.8%), and the measurement/photographic instruments industry (74.2%).

The paper industry, the third largest industry for total TRI releases, reported total releases 12.6% lower in 1995 than in 1988. In 1988, air emissions represented 88.1% of releases reported by facilities in this industry, and their reported air emissions have decreased much less (6.6%) than their releases to other media. Overall, only the lumber industry, with a 5.0% decrease in total releases, and the apparel industry, with a 33.6% increase, have shown less improvement for 1988 to 1995.

Table 5-6 presents the complete release and transfer data by industry group for 1988 through 1995.

Change in Releases and Transfers by Federal Facilities (1994-1995)

The 1995 reporting year is the second year of required reporting by federal facilities. As a result, it now is possible to compare data between reporting years. Like the private sector in its first years of reporting, federal facilities have made significant reductions in both releases and transfers.

Federal facilities reported a 2.1 million-pound decline in releases from 1994 to 1995 (see Table 5-7). This represents a 23.6% decrease. Department of Defense (DOD) facilities reported the largest decrease in pounds, 1.8 million pounds, with Air Force facilities accounting for 1.1 million pounds of the decrease.

Off-site transfers for federal facilities witnessed an even stronger drop between 1994 and 1995 (see Table 5-8). The difference was 3.4 million pounds, or 34.7%. Again DOD facilities accounted for most of the decrease, with Army facilities reporting decreases totalling 2.7 million pounds.

One of the more noteworthy differences between the 1995 data and 1994 data for federal facilities is the number of facilities reporting and the number of submissions. A total of 193 federal facilities filed 1994 reports. For 1995, however, the number was 144. Thus, there were 49 fewer federal facilities reporting in 1995 than in 1994. Many of the federal facilities which did not file for 1995 were among the smaller reporters, in terms of releases and transfers. These 49 facilities reported a total of 771,000 pounds of releases and 833,000 pounds of transfers in 1994 (these amounts include reports for all chemicals reportable in 1994, including ammonia, hydrochloric acid, and sulfuric acid). There were four of these facilities, however, that reported in excess of 90,000 pounds of releases and transfers.

Table 5-5. Change in Total TRI Releases by Industry, 1988-1995.[12]

SIC Code	Industry	Total Releases 1988 Pounds	1993 Pounds	1994 Pounds	1995 Pounds	1988-1995 Change Pounds	Percent
20	Food	7,288,468	7,527,563	6,159,814	5,281,131	-2,007,337	-27.5
21	Tobacco	341,927	137,118	134,771	95,226	-246,701	-72.2
22	Textiles	34,153,528	17,449,732	15,773,427	14,990,080	-19,163,448	-56.1
23	Apparel	922,129	1,002,727	1,311,274	1,232,144	310,015	33.6
24	Lumber	31,049,580	29,264,301	32,345,013	29,497,347	-1,552,233	-5.0
25	Furniture	61,362,570	54,275,528	51,525,040	40,711,615	-20,650,955	-33.7
26	Paper	201,458,920	146,849,329	180,646,013	176,175,802	-25,283,118	-12.6
27	Printing	60,694,291	36,147,817	34,312,906	31,375,373	-29,318,918	-48.3
28	Chemicals	979,850,322	679,468,132	495,870,742	492,004,551	-487,845,771	-49.8
29	Petroleum	67,649,305	49,334,492	42,534,901	40,189,664	-27,459,641	-40.6
30	Plastics	146,534,545	119,294,605	112,865,011	100,928,021	-45,606,524	-31.1
31	Leather	11,927,916	4,472,624	3,620,354	2,649,261	-9,278,655	-77.8
32	Stone/Clay/Glass	23,923,302	12,161,094	10,835,533	12,647,514	-11,275,788	-47.1
33	Primary Metals	471,663,856	281,310,049	273,635,165	291,696,854	-179,967,002	-38.2
34	Fabricated Metals	130,536,711	88,873,008	86,551,023	78,244,699	-52,292,012	-40.1
35	Machinery	59,463,237	26,566,269	23,576,090	19,293,375	-40,169,862	-67.6
36	Electrical Equip.	115,408,046	32,723,385	28,849,706	23,444,714	-91,963,332	-79.7
37	Transportation Equip.	188,629,628	121,899,571	118,900,227	104,852,457	-83,777,171	-44.4
38	Measure./Photo.	47,209,809	20,254,908	13,540,441	12,201,793	-35,008,016	-74.2
39	Miscellaneous	28,470,812	15,278,668	13,827,675	11,187,718	-17,283,094	-60.7
	Multiple codes 20-39[13]	283,311,125	131,240,085	137,651,115	114,131,972	-169,179,153	-59.7
	No codes 20-39[14]	10,499,196	18,029,092	16,394,308	7,616,847	-2,882,349	-27.5
	Total	2,962,349,223	1,893,560,097	1,700,860,549	1,610,448,158	-1,351,901,065	-45.6

One of the tasks for EPA and its fellow federal agencies is to determine the reason for this change. Some initial findings point to positive efforts on the part of federal agencies to implement pollution prevention. DOD, for instance, has changed the types of fuels stored at the bulk fuel terminals managed by the Defense Logistics Agency (DLA). The upshot is that thirteen DLA facilities which filed TRI reports for 1994 did not report for 1995. DOD also reports the closure of a few military bases which reported for 1994. At several facilities, including DOD and Department of Energy facilities, TRI chemical usage fell below the reporting threshold. These and other successful efforts to lower usage of TRI chemicals can be highlighted in the annual report to the President required under EO 12856.

Reasons for Change

Box 5-3 provides a general discussion of reasons that a facility's release and transfer estimates may change from one year to another. Both real changes and "paper" changes, described in Box 5-3, influence the summary data presented in any year-to-year comparison of TRI data.

Change in Releases and Transfers by Chemical

Table 5-9 presents TRI total release data for the 20 chemicals with the largest decreases in total releases from 1988 to 1995. Releases of 1,1,1-trichloroethane (TCA), an ozone-depleting

[12] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[13] Facilities/forms that reported more than one 2-digit SIC code within the range of 20-39 [e.g., paper (26) and chemicals (28)].

[14] Facilities/forms that did not report an SIC code or reported SIC codes outside the 20-to-39 range.

Table 5-6. TRI Releases and Transfers by Industry, 1988, 1993-1995.[15]

SIC Code	Industry	Year	Facilities[16] Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
20	Food	95	1,529	4,052,699	85,648	10	1,142,774	5,281,131
		94	1,526	4,793,575	51,174	260	1,314,805	6,159,814
		93	1,543	6,016,217	76,000	265	1,435,081	7,527,563
		88	1,185	4,745,286	1,395,632	12,800	1,134,750	7,288,468
21	Tobacco	95	6	85,526	9,700	0	0	95,226
		94	6	124,897	9,874	0	0	134,771
		93	11	121,946	15,172	0	0	137,118
		88	18	330,227	10,950	0	750	341,927
22	Textiles	95	309	14,908,977	74,205	0	6,898	14,990,080
		94	327	15,647,693	110,838	4	14,892	15,773,427
		93	349	17,239,768	164,842	0	45,122	17,449,732
		88	337	33,605,487	468,191	0	79,850	34,153,528
23	Apparel	95	24	1,231,889	5	0	250	1,232,144
		94	33	1,311,246	3	0	25	1,311,274
		93	37	1,001,118	965	0	644	1,002,727
		88	31	881,030	250	0	40,849	922,129
24	Lumber	95	619	29,480,871	9,334	0	7,142	29,497,347
		94	659	32,300,864	23,732	0	20,417	32,345,013
		93	655	29,240,362	19,725	0	4,214	29,264,301
		88	678	30,972,926	27,125	0	49,529	31,049,580
25	Furniture	95	506	40,701,140	872	0	9,603	40,711,615
		94	553	51,461,057	266	0	63,717	51,525,040
		93	565	54,030,942	616	0	243,970	54,275,528
		88	499	61,287,270	3,051	0	72,249	61,362,570
26	Paper	95	449	165,779,219	7,007,433	220	3,388,930	176,175,802
		94	480	167,157,429	8,785,152	0	4,703,432	180,646,013
		93	511	133,685,603	8,449,542	0	4,714,184	146,849,329
		88	583	177,539,505	13,438,239	3,000	10,478,176	201,458,920
27	Printing	95	261	31,356,401	14,372	0	4,600	31,375,373
		94	281	34,310,693	843	0	1,370	34,312,906
		93	314	36,138,073	587	0	9,157	36,147,817
		88	356	60,581,384	32,091	40,000	40,816	60,694,291
28	Chemicals	95	3,609	274,732,696	24,625,261	133,580,355	59,066,239	492,004,551
		94	3,679	291,931,284	26,547,565	112,421,559	64,970,334	495,870,742
		93	3,770	326,399,237	181,516,758	108,502,547	63,049,590	679,468,132
		88	3,672	583,450,608	140,266,426	159,344,099	96,789,189	979,850,322
29	Petroleum	95	378	38,551,071	600,491	862,178	175,924	40,189,664
		94	387	40,715,308	467,711	710,581	641,301	42,534,901
		93	394	47,279,471	574,196	723,959	756,866	49,334,492
		88	376	63,801,575	747,282	527,819	2,572,629	67,649,305
30	Plastics	95	1,686	100,562,755	20,325	0	344,941	100,928,021
		94	1,769	112,576,281	42,473	0	246,257	112,865,011
		93	1,773	118,884,394	26,387	0	383,824	119,294,605
		88	1,468	146,345,773	30,931	754	157,087	146,534,545
31	Leather	95	82	2,632,938	1,600	0	14,723	2,649,261
		94	97	3,602,328	1,967	0	16,059	3,620,354
		93	115	4,459,131	4,095	0	9,398	4,472,624
		88	137	11,692,677	3,302	0	231,937	11,927,916
32	Stone/Clay/Glass	95	576	11,489,964	48,156	0	1,109,394	12,647,514
		94	577	9,505,859	45,248	0	1,284,426	10,835,533
		93	596	10,421,742	87,871	0	1,651,481	12,161,094
		88	570	20,772,672	104,998	0	3,045,632	23,923,302
33	Primary Metals	95	1,762	106,082,467	1,143,976	181,224	184,289,187	291,696,854
		94	1,783	99,521,962	1,761,143	292,868	172,059,192	273,635,165
		93	1,832	114,024,533	1,235,465	222,872	165,827,179	281,310,049
		88	1,576	205,691,802	3,552,854	784,604	261,634,596	471,663,856

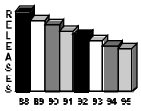


Table 5-6.

SIC Code	Industry	Year	Transfers to Recycling[17] Pounds	Transfers to Energy Recovery[17] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[18] Pounds	Total Transfers[19] Pounds
20	Food	95	878,895	174,671	441,457	11,306,754	260,512	250	13,062,539
		94	994,803	144,835	679,937	11,377,738	458,085	5,004	13,660,402
		93	1,225,901	91,945	573,227	11,049,749	635,342	1,755	13,577,919
		88	NA	NA	237,511	14,027,014	1,085,457	122,933	NA
21	Tobacco	95	0	1,000	521	0	0	0	1,521
		94	0	0	5	0	0	0	5
		93	139,622	3,800	1,020	18	2,149	0	146,609
		88	NA	NA	120,996	81,110	0	0	NA
22	Textiles	95	724,971	1,872,701	553,360	2,011,065	513,442	0	5,675,539
		94	719,188	1,269,996	503,222	2,091,126	553,144	0	5,136,676
		93	711,531	1,190,890	470,082	2,612,025	991,039	0	5,975,567
		88	NA	NA	1,373,980	9,763,696	1,644,849	109,478	NA
23	Apparel	95	3,021	103,627	60,050	255	27,842	0	194,795
		94	88,230	125,515	121,699	2,636	69,673	0	407,753
		93	139,113	165,753	76,039	53,139	48,017	0	482,061
		88	NA	NA	45,425	276,730	103,568	5,351	NA
24	Lumber	95	444,112	2,551,381	286,504	6,006	312,407	2,418	3,602,828
		94	627,071	2,499,547	228,431	22,448	394,629	250	3,772,376
		93	833,661	2,417,962	562,227	7,207	494,820	4,300	4,320,177
		88	NA	NA	2,438,178	79,544	1,932,227	395,167	NA
25	Furniture	95	6,525,939	6,890,176	787,567	122,428	107,145	250	14,433,505
		94	4,201,644	6,370,236	1,739,882	134,380	284,499	5,772	12,736,413
		93	6,215,841	6,487,071	1,266,075	96,573	375,111	5,458	14,446,129
		88	NA	NA	3,706,391	250,472	974,037	1,143,394	NA
26	Paper	95	4,931,767	8,340,816	8,918,206	40,999,384	2,723,991	500	65,914,664
		94	1,814,356	8,893,236	8,859,734	40,562,271	2,756,515	20	62,886,132
		93	1,952,248	7,590,098	8,287,694	36,261,058	2,574,572	0	56,665,670
		88	NA	NA	11,882,811	49,614,880	6,186,598	110,559	NA
27	Printing	95	5,558,208	3,679,294	418,712	209,444	52,645	3,866	9,922,169
		94	6,228,807	3,301,908	531,812	233,217	59,490	22,740	10,377,974
		93	5,318,723	3,993,983	364,279	347,257	179,519	387	10,204,148
		88	NA	NA	4,505,946	1,751,776	493,227	396,671	NA
28	Chemicals	95	221,450,090	382,211,563	141,770,887	74,354,458	23,843,828	128,379	843,759,205
		94	243,423,939	349,170,238	126,676,534	78,049,803	25,716,934	426,229	823,463,677
		93	238,426,312	334,927,197	123,087,736	84,603,149	25,454,226	134,728	806,633,348
		88	NA	NA	172,345,824	131,623,770	66,567,653	16,517,434	NA
29	Petroleum	95	22,792,173	542,664	944,326	4,492,286	3,111,135	1	31,882,585
		94	20,347,405	1,378,553	1,253,612	3,349,685	3,473,201	0	29,802,456
		93	20,587,506	1,129,985	762,967	4,318,705	2,686,748	0	29,485,911
		88	NA	NA	2,538,235	6,087,311	4,327,532	906,249	NA
30	Plastics	95	18,768,167	7,191,208	2,970,991	700,271	10,937,221	46,580	40,614,438
		94	20,734,792	8,121,166	3,185,059	1,012,907	12,130,019	1,628	45,185,571
		93	16,391,196	9,420,989	4,391,204	775,654	10,097,163	13,642	41,089,848
		88	NA	NA	9,187,874	1,319,433	11,770,926	393,879	NA
31	Leather	95	434,713	259,792	6,686	524,995	1,410,935	0	2,637,121
		94	499,037	270,203	22,020	629,324	1,425,439	0	2,846,023
		93	247,344	315,372	62,133	627,750	1,967,848	0	3,220,447
		88	NA	NA	1,151,152	814,909	1,095,701	4,715	NA
32	Stone/Clay/Glass	95	3,113,059	3,269,384	2,225,725	659,921	5,973,277	250	15,241,616
		94	2,909,703	4,318,065	2,267,816	460,048	5,870,013	21,935	15,847,580
		93	3,499,916	6,727,389	2,794,331	447,763	8,363,068	265	21,832,732
		88	NA	NA	2,563,554	628,314	16,286,012	34,223	NA
33	Primary Metals	95	741,054,282	3,645,954	30,998,289	3,263,563	161,439,081	1,931,499	942,332,668
		94	811,528,694	3,593,375	23,085,769	2,950,281	159,181,498	431,539	1,000,771,156
		93	735,354,619	3,448,116	18,382,978	2,953,062	141,647,885	955,902	902,742,562
		88	NA	NA	46,060,054	4,986,095	157,417,139	8,830,043	NA

Table 5-6. TRI Releases and Transfers by Industry, 1988, 1992-1994, Continued.[15]

SIC Code	Industry	Year	Facilities[16] Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
34	Fabricated Metals	95	2,704	77,514,314	99,653	681	630,051	78,244,699
		94	2,801	85,852,914	73,094	1,885	623,130	86,551,023
		93	2,870	88,207,214	60,808	693	604,293	88,873,008
		88	2,743	125,758,308	633,429	154,199	3,990,775	130,536,711
35	Machinery	95	965	19,175,747	17,164	0	100,464	19,293,375
		94	999	23,319,412	106,126	0	150,552	23,576,090
		93	1,042	26,293,192	203,892	750	68,435	26,566,269
		88	1,010	59,099,013	147,837	0	216,387	59,463,237
36	Electrical Equip.	95	1,135	23,064,346	47,022	5	333,341	23,444,714
		94	1,197	28,640,180	54,928	0	154,598	28,849,706
		93	1,292	32,192,486	91,939	269	438,691	32,723,385
		88	1,632	114,473,357	309,962	36,999	587,728	115,408,046
37	Transportation Equip.	95	1,213	104,477,828	67,186	0	307,443	104,852,457
		94	1,237	118,659,367	65,553	5	175,302	118,900,227
		93	1,250	120,380,215	69,876	505	1,448,975	121,899,571
		88	1,146	185,947,448	272,596	76,185	2,333,399	188,629,628
38	Measure./Photo.	95	271	11,946,854	249,173	0	5,766	12,201,793
		94	292	13,213,815	319,552	0	7,074	13,540,441
		93	339	19,700,884	549,067	0	4,957	20,254,908
		88	366	46,478,774	390,382	250	340,403	47,209,809
39	Miscellaneous	95	323	11,185,303	1,146	0	1,269	11,187,718
		94	348	13,819,552	1,229	0	6,894	13,827,675
		93	365	15,264,196	1,189	0	13,283	15,278,668
		88	391	28,202,314	8,076	1	260,421	28,470,812
Multiple codes 20-39[20]		95	1,360	97,394,693	1,538,040	1,801,200	13,398,039	114,131,972
		94	1,432	104,223,401	1,277,767	424,751	31,725,196	137,651,115
		93	1,492	106,766,790	1,521,816	14,728	22,936,751	131,240,085
		88	1,396	206,077,594	2,418,904	957,610	73,857,017	283,311,125
No codes 20-39[21]		95	201	6,242,949	133,493	325,751	914,654	7,616,847
		94	234	11,228,343	228,642	318,318	4,619,005	16,394,308
		93	145	9,618,969	193,033	3,823,052	4,394,038	18,029,092
		88	242	8,976,719	204,007	812	1,317,658	10,499,196
Total		95	19,968	1,172,650,647	35,794,255	136,751,624	265,251,632	1,610,448,158
		94	20,697	1,263,917,460	39,974,880	114,170,231	282,797,978	1,700,860,549
		93	21,260	1,317,366,483	194,863,841	113,289,640	268,040,133	1,893,560,097
		88	20,412	2,176,711,749	164,466,515	161,939,132	459,231,827	2,962,349,223

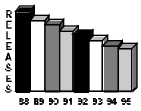


Table 5-6, Cont.

SIC Code	Industry	Year	Transfers to Recycling[17] Pounds	Transfers to Energy Recovery[17] Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Transfers to Disposal Pounds	Other Off-site Transfers[18] Pounds	Total Transfers[19] Pounds
34	Fabricated Metals	95	310,645,919	14,133,876	9,334,190	1,945,458	11,210,967	23,506	347,293,916
		94	272,331,255	14,046,951	9,257,053	1,771,244	12,511,704	185,370	310,103,577
		93	249,494,105	14,973,155	9,744,472	1,584,808	11,897,818	64,441	287,758,799
		88	NA	NA	18,398,775	5,577,678	29,967,572	5,500,570	NA
35	Machinery	95	60,107,366	2,990,493	1,535,954	2,036,086	2,966,759	19,755	69,656,413
		94	59,489,526	2,996,971	1,632,838	1,701,716	3,115,144	21,252	68,957,447
		93	53,675,865	2,818,933	2,039,562	1,464,035	3,289,640	34,750	63,322,785
		88	NA	NA	8,166,716	1,451,927	10,213,069	1,538,666	NA
36	Electrical Equip.	95	367,203,906	9,853,293	5,771,210	2,700,903	7,800,677	32,683	393,362,672
		94	346,289,062	9,295,906	7,151,303	2,521,761	7,725,715	13,837	372,997,584
		93	291,771,241	9,080,867	7,625,300	2,473,592	9,059,032	125,458	320,135,490
		88	NA	NA	16,893,764	5,297,962	17,256,677	1,312,057	NA
37	Transportation Equip.	95	161,426,193	14,936,000	4,806,414	2,387,236	9,553,598	29,466	193,138,907
		94	161,328,257	16,378,854	6,047,190	3,155,819	8,941,889	2,260,013	198,112,022
		93	141,027,191	17,463,954	6,775,094	3,449,445	11,265,507	974,835	180,956,026
		88	NA	NA	24,158,554	4,016,492	19,751,705	3,632,265	NA
38	Measure./Photo.	95	13,957,319	2,276,954	3,073,986	558,049	773,789	0	20,640,097
		94	13,828,048	3,083,878	4,216,534	695,744	808,871	0	22,633,075
		93	13,789,135	3,335,651	2,869,094	817,219	766,044	0	21,577,143
		88	NA	NA	6,825,419	2,267,406	10,875,015	196,621	NA
39	Miscellaneous	95	18,936,493	2,885,239	568,819	439,131	1,941,342	2,140	24,773,164
		94	18,360,745	2,746,412	832,561	473,110	1,412,648	19,107	23,844,583
		93	20,272,579	2,772,811	1,060,329	503,519	3,278,840	5	27,888,083
		88	NA	NA	5,060,326	286,025	4,110,398	369,598	NA
Multiple codes 20-39[20]		95	179,340,175	16,407,214	18,304,370	5,696,374	9,278,428	255	229,026,816
		94	178,788,746	16,569,705	16,410,585	6,903,935	11,373,703	587	230,047,261
		93	131,722,884	15,764,651	16,773,361	8,370,953	15,374,175	43,681	188,049,705
		88	NA	NA	28,155,040	13,791,775	23,394,047	1,305,092	NA
No codes 20-39[21]		95	3,028,603	1,439,159	1,453,187	247,923	546,168	0	6,715,040
		94	4,233,562	885,536	2,512,983	365,410	1,114,174	6,000	9,117,665
		93	4,219,924	642,879	262,351	416,774	222,508	299	5,764,735
		88	NA	NA	3,343,555	728,606	729,846	34,245	NA
Total		95	2,141,325,371	485,656,459	235,231,411	154,661,990	254,785,189	2,221,798	3,273,882,218
		94	2,168,766,870	455,461,086	217,216,579	158,464,603	259,376,987	3,421,283	3,262,707,408
		93	1,937,016,457	444,763,451	208,231,555	163,233,454	250,671,071	2,359,906	3,006,275,894
		88	NA	NA	369,160,080	254,722,925	386,183,255	42,859,210	NA

[15] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[16] Facilities have been assigned to the "multiple" category according to all the SIC codes they reported. Forms and amounts in in pounds have been assigned to single category SIC codes if only one SIC code was reported for a particular chemical form from the facility.

[17] NA: Transfers to recycling or energy recovery were not required to be reported for 1988.

[18] For 1993, 1994, and 1995, transfers reported with no waste management codes or invalid codes. For 1988, transfers reported with no waste management codes, invalid codes, or codes not required to be reported in 1988.

[19] Because transfers for recycling or energy recovery were not required to be reported in 1988, total transfers in 1988 are not comparable to total transfers reported for 1993, 1994, or 1995.

[20] Facilities/forms that reported more than one 2-digit SIC code within the range of 20 to 39 [e.g. paper (26) and chemicals (28)].

[21] Facilities/forms that did not report an SIC code or reported only SIC codes outside the 20-to-39 range.

Table 5-7. Comparison of Total TRI Releases from Federal Facilities by Agency, 1994-1995.[22]

Agency	Total Releases		1994-1995 Change	
	1994 Pounds	1995 Pounds	Pounds	Percent
Dept. of Defense	6,730,407	4,933,517	-1,796,890	-26.7
Air Force	4,416,764	3,289,955	-1,126,809	-25.5
Army	898,823	637,661	-261,162	-29.1
Army Corps of Engineers	22,310	22,365	55	0.2
Defense Logistics Agency	31,707	5,351	-26,356	-83.1
Marines	455,752	335,038	-120,714	-26.5
National Security Agency	0	0	0	—
Navy	905,051	643,147	-261,904	-28.9
Dept. of Energy	555,120	512,523	-42,597	-7.7
Dept. of Health and Human Services	500	0	-500	-100.0
Dept. of Interior	1,161	4,836	3,675	316.5
Dept. of Justice	92,360	32,510	-59,850	-64.8
Dept. of Transportation	23,816	16,499	-7,317	-30.7
Dept. of Treasury	6,300	37,380	31,080	493.3
Dept. of Veterans Affairs	0	0	0	—
Environmental Protection Agency	20	11	-9	-45.0
National Aeronautics and Space Admin.	549,153	473,969	-75,184	-13.7
Tennessee Valley Authority	23,725	0	-23,725	-100.0
U.S. Enrichment Corporation	751,596	663,721	-87,875	-11.7
Total	8,734,158	6,674,966	-2,059,192	-23.6

Table 5-8. Comparison of TRI Transfers from Federal Facilities by Agency, 1994-1995.[22]

Agency	Total Transfers		1994-1995 Change	
	1994 Pounds	1995 Pounds	Pounds	Percent
Dept. of Defense	9,303,301	5,688,310	-3,614,991	-38.9
Air Force	1,382,312	1,059,982	-322,330	-23.3
Army	6,366,714	3,672,660	-2,694,054	-42.3
Army Corps of Engineers	0	325	325	—
Defense Logistics Agency	15,730	2,792	-12,938	-82.3
Marines	782,122	559,840	-222,282	-28.4
National Security Agency	38	0	-38	-100.0
Navy	756,385	392,711	-363,674	-48.1
Dept. of Energy	56,411	69,256	12,845	22.8
Dept. of Health and Human Services	139,898	55,112	-84,786	-60.6
Dept. of Interior	4,500	0	-4,500	-100.0
Dept. of Justice	0	0	0	—
Dept. of Transportation	6,343	6,343	0	0.0
Dept. of Treasury	201,335	441,728	240,393	119.4
Dept. of Veterans Affairs	0	91,000	91,000	—
Environmental Protection Agency	0	0	0	—
National Aeronautics and Space Admin.	97,570	73,031	-24,539	-25.2
Tennessee Valley Authority	27,066	0	-27,066	-100.0
U.S. Enrichment Corporation	0	0	0	—
Total	9,836,424	6,424,780	-3,411,644	-34.7

[22] Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid.

Reasons Facility Release and Transfer Estimates Change

Some reported increases and decreases are real—that is, they reflect changes in the amounts of TRI chemicals actually released or transferred. Other reported increases and decreases are accounting or "paper" changes that do not reflect any actual change in releases and transfers. Some examples follow.

Real Changes

Source reduction activities, such as process changes, elimination of spills and leaks, inventory control, improved maintenance, chemical substitution, and alternative methods of cleaning and degreasing can cause real reductions in TRI releases and transfers.

Installation of pollution control equipment may lead to real reductions in TRI releases/transfers. However, if the pollution control does not destroy the reported chemical, it may merely shift waste from one type of release or disposal to another.

Increased recycling and reuse of waste or sale of waste as raw materials or products will result in real decreases in TRI releases and/or transfers for treatment and disposal.

Production changes can cause real changes in the quantities of TRI chemicals released or transferred by facilities. Releases/transfers are likely to increase when production increases and decrease when production decreases, although the relationship is not necessarily linear.

One-time events unrelated to normal production processes, such as accidental releases or clean-up operations, can cause a real but anomalous increase in the reporting year in which they occur and then a decrease from that abnormally high level the following year.

"Paper" Changes

Changes in estimation or calculation techniques can cause a change in the amount reported without a corresponding change in actual releases or transfers.

Clarifications of reporting instructions or changes in the way a facility interprets those instructions may cause a change in reported amounts without an actual change in releases or transfers. For example, revised guidance concerning the de minimis exemption and beneficiation activities which was issued by EPA for 1991 may have resulted in lower reported releases for some facilities.

Changes in reporting definition of a particular chemical may cause a change in the reported amounts without an actual change in releases or transfers. For example, revising the definitions of sulfuric acid and hydrochloric acid to include only aerosol forms, as discussed in Chapter 4, will result in lower reports of releases, when non-aerosol forms are no longer reported.

Similarly, a facility's reported releases may go down without an actual reduction in releases if the facility begins to take advantage of a reporting exemption. Beginning in the 1995 reporting year, some facilities whose "total annual reportable amount" for a reportable chemical does not exceed 500 pounds will no longer report amounts released or transferred because of this exemption.

Apparent increases or decreases can occur if a facility makes a reporting error one year and does not submit a revision for that year, but does not repeat the error the following year.

Box 5-3. Reasons Facility Release and Transfer Estimates Change.

Table 5-9. Top 20 TRI Chemicals for Decreases in Total Releases, 1988-1995.[23]

CAS Number[24]	Chemical	Total Releases				1988-1995 Change	
		1988 Pounds	1993 Pounds	1994 Pounds	1995 Pounds	Pounds	Percent
71-55-6	1,1,1-Trichloroethane	181,107,819	65,258,631	38,670,891	22,641,561	-158,466,258	-87.5
108-88-3	Toluene	301,537,609	180,182,060	170,159,145	145,887,469	-155,650,140	-51.6
7664-38-2	Phosphoric acid	177,280,587	214,274,343	80,975,082	57,558,030	-119,722,557	-67.5
7782-50-5	Chlorine	140,247,259	76,191,607	60,515,570	66,255,896	-73,991,363	-52.8
75-09-2	Dichloromethane	131,097,478	66,116,674	64,180,825	57,289,960	-73,807,518	-56.3
78-93-3	Methyl ethyl ketone	141,570,666	86,940,148	80,189,922	70,054,939	-71,515,727	-50.5
67-56-1	Methanol	313,060,173	216,983,456	244,582,545	245,012,356	-68,047,817	-21.7
76-13-1	Freon 113	70,481,330	9,871,141	5,352,197	2,602,475	-67,878,855	-96.3
1330-20-7	Xylene (mixed isomers)	159,625,249	113,923,040	110,473,556	95,739,943	-63,885,306	-40.0
—	Manganese compounds	93,522,264	50,053,717	41,454,397	44,977,221	-48,545,043	-51.9
75-15-0	Carbon disulfide	124,206,241	101,993,932	84,171,126	84,169,763	-40,036,478	-32.2
—	Zinc compounds	121,922,752	69,770,422	81,674,982	87,648,691	-34,274,061	-28.1
79-01-6	Trichloroethylene	55,963,013	30,585,109	30,395,787	25,489,839	-30,473,174	-54.5
127-18-4	Tetrachloroethylene	36,310,755	11,869,502	10,540,587	9,400,811	-26,909,944	-74.1
71-43-2	Benzene	33,331,109	11,509,393	9,936,613	9,592,003	-23,739,106	-71.2
7440-66-6	Zinc (fume or dust)	30,062,856	12,199,430	10,135,623	8,465,169	-21,597,687	-71.8
67-66-3	Chloroform	27,218,821	14,369,572	11,436,029	10,600,257	-16,618,564	-61.1
74-85-1	Ethylene	50,313,255	34,434,853	34,693,534	34,145,959	-16,167,296	-32.1
7697-37-2	Nitric acid	36,475,124	22,884,094	21,379,834	21,344,509	-15,130,615	-41.5
79-10-7	Acrylic acid	23,094,652	4,105,708	6,931,783	8,369,839	-14,724,813	-63.8

chemical, declined by 158.5 million pounds, a decrease of 87.5%. TCA production was banned effective January 1, 1996, along with many other ozone depleters. The decrease in reported releases of toluene nearly matches that of TCA: 155.7 million pounds. This represents a 51.6% decline in toluene releases. Only one other chemical shows a decrease of more than 100 million pounds in releases over the seven-year period: phosphoric acid, with a 119.7 million-pound reduction (67.5%).

Methanol, the chemical with the largest reported TRI releases, ranks seventh for decreases. Methanol releases have declined 68.0 million pounds, or 21.7%, since 1988.

The 20 TRI chemicals with the largest increases in total releases from 1988 to 1995 appear in Table 5-10. Copper compounds lead this list, with an increase of 10.4 million pounds, or 31.4%. Acetonitrile releases increased by 9.9 million pounds, or 52.1%, and styrene by 7.5 million pounds, or 21.9%.

At the end of this chapter, Table 5-15 presents the complete release and transfer information for all TRI chemicals for which reports have been received in at least one year between 1988 and 1995.

33/50 Program Chemicals

Releases and transfers for the 17 chemicals covered under the 33/50 Program continued their downward trend in 1995. Comparing the data from this most recent year with the data from previous years offers several interesting and important statistics. Similarly, contrasting

[23] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[24] Compound categories do not have CAS numbers (—).

Table 5-10. Top 20 TRI Chemicals for Increases in Total Releases, 1988-1995.[25]

CAS Number[26]	Chemical	Total Releases				1988-1995 Change	
		1988 Pounds	1993 Pounds	1994 Pounds	1995 Pounds	Pounds	Percent
—	Copper compounds	33,191,298	47,605,964	47,320,341	43,628,455	10,437,157	31.4
75-05-8	Acetonitrile	18,977,762	17,060,881	18,216,554	28,866,549	9,888,787	52.1
100-42-5	Styrene	34,363,099	34,453,842	40,541,686	41,873,608	7,510,509	21.9
75-07-0	Acetaldehyde	9,461,548	9,262,401	13,058,034	14,410,140	4,948,592	52.3
79-06-1	Acrylamide	2,227,899	4,041,746	5,217,625	6,141,395	3,913,496	175.7
95-63-6	1,2,4-Trimethylbenzene	4,438,152	6,955,879	7,863,594	7,526,129	3,087,977	69.6
100-41-4	Ethylbenzene	8,005,706	10,856,796	12,724,422	10,657,521	2,651,815	33.1
60-35-5	Acetamide	0	1,089,016	466,028	920,008	920,008	—
1634-04-4	Methyl tert-butyl ether	2,624,516	3,813,036	3,242,678	3,482,935	858,419	32.7
108-39-4	m-Cresol	19,170	556,762	668,142	729,675	710,505	3,706.3
95-48-7	o-Cresol	91,908	727,480	677,434	602,507	510,599	555.6
—	Cyanide compounds	5,257,170	3,367,472	4,382,767	5,576,063	318,893	6.1
74-90-8	Hydrogen cyanide	2,851,188	3,056,324	3,143,263	3,165,086	313,898	11.0
1163-19-5	Decabromodiphenyl oxide	51,846	712,168	470,311	244,826	192,980	372.2
—	Selenium compounds	63,906	200,864	249,350	187,277	123,371	193.1
—	Cobalt compounds	177,532	233,306	274,339	299,601	122,069	68.8
1313-27-5	Molybdenum trioxide	544,569	477,177	471,573	665,514	120,945	22.2
140-88-5	Ethyl acrylate	247,458	204,650	197,503	354,321	106,863	43.2
105-67-9	2,4-Dimethylphenol	37,174	86,647	122,702	131,585	94,411	254.0
85-44-9	Phthalic anhydride	552,214	487,361	430,981	605,986	53,772	9.7

these reduction patterns with the decreases for all other TRI chemicals highlights the positive role the 33/50 Program has played in industry's environmental efforts.

Perhaps the most anticipated result was the final reduction total. The 33/50 Program set a 50% reduction goal for 1995, the final year of the initiative, based on 1988 data. Although this goal was met one year early with the 1994 data, the question was the degree to which the 50% would be surpassed with the 1995 data. In fact, releases and transfers for the 17 chemicals decreased by 831,000 pounds, or 55.6%.

Table 5-11 provides additional breakdowns for time frames within the 33/50 Program's seven years. The first is the period 1988-1990. This corresponds to the two years before EPA contacted companies about joining. When EPA launched the 33/50 Program in 1990, 1988 was chosen as the baseline because at the time the 1988 TRI data was the most recent data available. During this period, releases and transfers for the 17 chemicals decreased by 15.5%. This pace is roughly the same as the reduction for all the other TRI chemicals (14.4%). This similarity is unsurprising since there would have been no impetus for companies to target the 33/50 Program chemicals over the other TRI chemicals during those two years.

A noticeable difference is seen during the period 1990-1995 (see Figure 5-2). As stated above, EPA first asked companies to participate in the 33/50 Program in 1991. The 1990-1995 time frame, therefore, would highlight the impact of the program on industry's efforts vis-a-vis the 17 targeted chemicals. In fact, during this period,

[25] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[26] Compound categories do not have CAS numbers (—).

Table 5-11. Releases and Transfers of 33/50 Program Chemicals Compared to Other TRI Chemicals, 1988, 1990, 1994, 1995.[27]

Year	All TRI Chemicals (Excluding Additions/ Deletions) Pounds	TRI Chemicals Less 33/50 Chemicals Pounds	33/50 Chemicals Only Pounds
1988	4,015,274,693	2,519,785,338	1,495,489,355
1990	3,420,349,063	2,156,389,453	1,263,959,610
1994	2,339,340,001	1,594,908,085	744,431,916
1995	2,257,348,546	1,592,918,680	664,429,866
	Change Percent	Change Percent	Change Percent
1988-1990	-14.8%	-14.4%	-15.5%
1990-1995	-34.0%	-26.1%	-47.4%
1994-1995	-3.5%	-0.1%	-10.7%
1988-1995	-43.8%	-36.8%	-55.6%

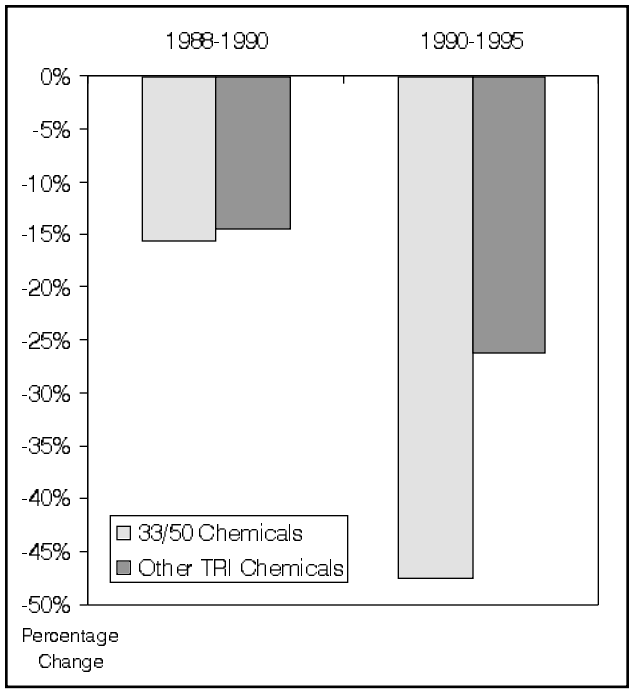


Figure 5-2. Releases and Transfers of 33/50 Program Chemicals Compared to Other TRI Chemicals, 1988-1995.[27]

the 33/50 Program chemicals declined by over 47%. For all other TRI chemicals, the decrease was 26%. At an average rate of greater than 10% per year, industry almost achieved a 50% reduction using 1990 data as the starting point.

Comparing 1995 data to 1994 data also highlights the positive role of the 33/50 Program. The difference for the 17 chemicals is 10.8% (see Table 5-11). All other TRI chemicals declined by 0.1%. The overall TRI reduction of 3.5%, therefore, in large part reflects the changes of the 33/50 Program chemicals.

On a chemical-by-chemical basis (Figure 5-3), the reduction rates show more dramatic changes for the non-metals. Every non-metal decreased by at least 44% between 1988 and 1995. The biggest percent change was for 1,1,1-trichloroethane, which declined by 88%. This chemical is an ozone depleter and its production has been banned as of January 1, 1996. While in 1988 this

[27] Does not include amount for recycling and energy recovery reported for 1991-1995. Also excludes delisted chemicals, chemicals added in 1990, 1991, 1994 and 1995, and aluminum oxide, ammonia, sulfuric acid and hydrochloric acid.

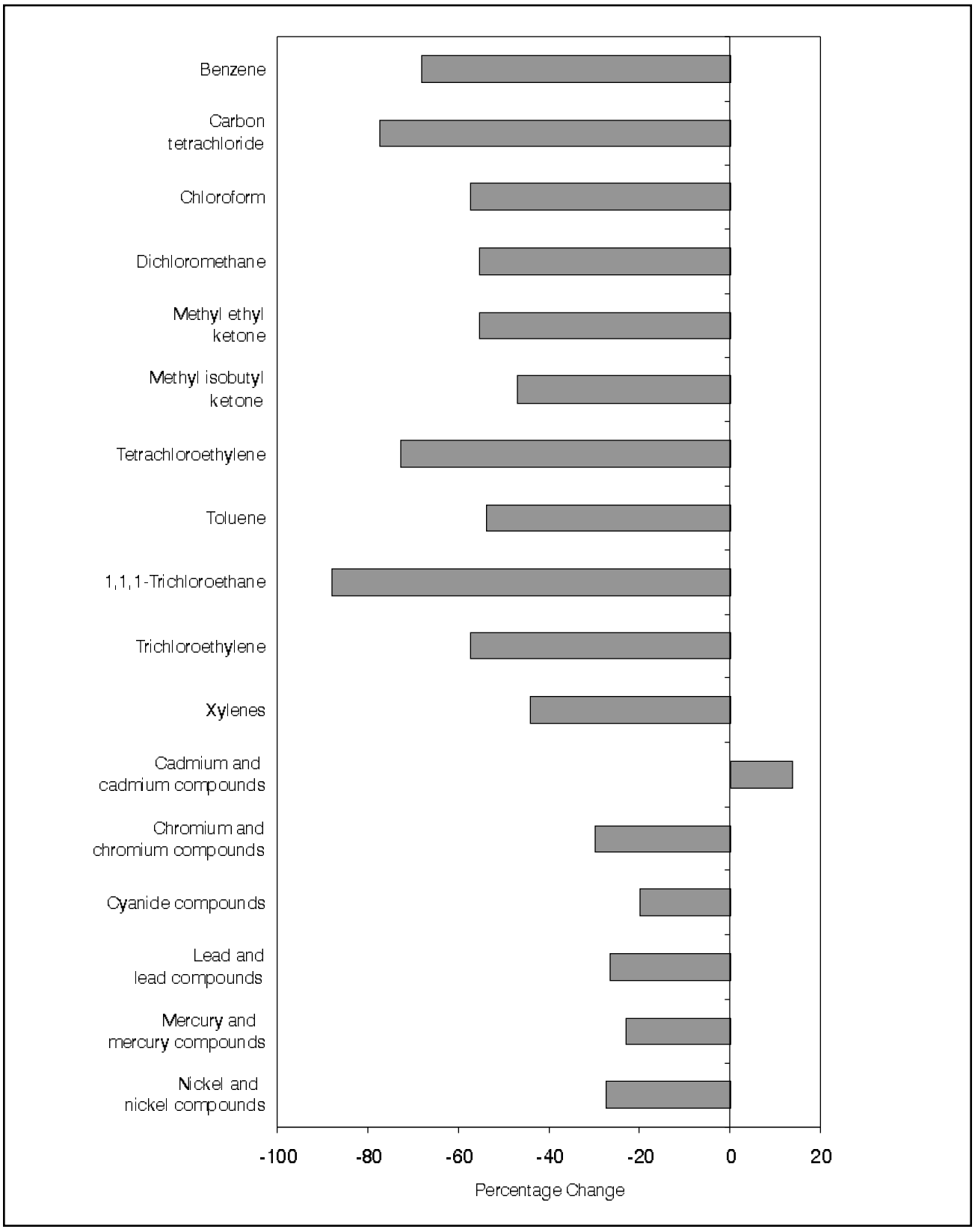


Figure 5-3. Percentage Change in Releases and Transfers of 33/50 Program Chemicals, 1988-1995.[28]

[28] Does not include amounts for transfers to recycling and energy recovery reported for 1991-1995.

Table 5-12. TRI Releases and Transfers of 33/50 Program Chemicals, 1988, 1990, 1994, 1995.[29]

CAS Number	Chemical	Year	Total Forms Number	Fugitive or Nonpoint Air Emissions Pounds	Stack or Point Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
71-43-2	Benzene	95	465	4,039,259	5,239,734	21,300	275,242	16,468	9,592,003
		94	492	5,385,963	4,280,103	22,294	223,103	25,150	9,936,613
		90	504	14,729,566	10,927,692	25,303	689,066	717,008	27,088,635
		88	483	20,648,053	11,683,118	46,982	825,035	127,921	33,331,109
56-23-5	Carbon tetrachloride	95	69	140,135	254,041	717	53,966	0	448,859
		94	70	226,082	415,870	1,223	12,654	0	655,829
		90	100	419,002	1,320,385	4,718	31,557	1,005	1,776,667
		88	95	1,084,548	2,694,047	15,627	98,050	14,759	3,907,031
67-66-3	Chloroform	95	159	3,326,071	6,907,283	329,330	33,276	4,297	10,600,257
		94	167	3,485,479	7,483,557	375,212	80,002	11,779	11,436,029
		90	192	8,594,655	14,527,935	997,560	89,560	57,992	24,267,702
		88	169	7,790,990	18,197,619	1,124,965	36,000	69,247	27,218,821
75-09-2	Dichloromethane	95	963	22,188,420	33,930,771	28,370	1,140,335	2,064	57,289,960
		94	1,050	25,172,356	37,932,893	52,289	960,942	62,345	64,180,825
		90	1,453	38,208,658	62,753,254	194,764	850,018	21,024	102,027,718
		88	1,674	49,639,287	79,472,242	349,960	1,478,833	157,156	131,097,478
78-93-3	Methyl ethyl ketone	95	2,255	24,861,372	44,485,984	63,120	556,607	87,856	70,054,939
		94	2,422	27,584,990	51,882,531	108,385	575,848	38,168	80,189,922
		90	2,723	45,837,357	88,730,844	94,443	146,209	50,591	134,859,444
		88	2,528	41,980,079	99,076,559	91,476	255,955	166,597	141,570,666
108-10-1	Methyl isobutyl ketone	95	1,001	5,629,446	15,874,810	51,282	158,600	7,041	21,721,179
		94	1,043	6,872,652	18,547,950	80,177	131,600	12,201	25,644,580
		90	1,125	9,875,727	18,538,178	55,593	52,226	24,738	28,546,462
		88	1,011	13,049,874	18,985,959	762,108	116,650	31,770	32,946,361
127-18-4	Tetrachloro-ethylene	95	428	4,493,166	4,884,751	2,407	20,481	6	9,400,811
		94	467	4,912,796	5,615,514	3,877	4,051	4,349	10,540,587
		90	667	9,351,400	13,597,047	21,510	11,012	1,260	22,982,229
		88	747	16,336,532	19,786,515	33,314	72,250	82,144	36,310,755
108-88-3	Toluene	95	3,370	52,017,387	93,446,998	53,287	303,491	66,306	145,887,469
		94	3,622	58,263,732	111,165,297	82,706	496,440	150,970	170,159,145
		90	4,293	87,840,763	161,852,697	201,580	1,432,923	370,832	251,698,795
		88	4,001	105,975,578	193,159,959	196,957	1,473,666	731,449	301,537,609
71-55-6	1,1,1-Trichloro-ethane	95	781	10,908,176	11,692,921	1,118	126	39,220	22,641,561
		94	1,232	20,300,113	18,366,045	2,283	102	2,348	38,670,891
		90	4,215	85,759,407	83,134,494	16,984	1,586	62,446	168,974,917
		88	3,921	93,115,800	87,690,472	95,624	1,000	204,923	181,107,819
79-01-6	Trichloro-ethylene	95	717	12,230,811	13,253,424	1,477	550	3,577	25,489,839
		94	789	14,859,385	15,530,026	1,671	288	4,417	30,395,787
		90	808	19,051,007	20,931,585	14,285	805	12,554	40,010,236
		88	951	26,168,126	29,759,510	13,801	390	21,186	55,963,013
	Xylenes	95	3,393	24,687,698	75,804,849	36,099	95,103	143,527	100,767,276
		94	3,570	27,822,686	87,855,934	55,805	314,461	248,263	116,297,149
		90	3,990	37,452,840	111,908,884	49,549	105,399	423,453	149,940,125
		88	3,648	39,742,449	129,758,941	213,032	144,978	647,989	170,507,389
	Cadmium and cadmium compounds	95	154	10,340	42,712	1,108	109	69,057	123,326
		94	159	8,946	50,255	2,034	170	60,872	122,277
		90	257	31,035	72,265	3,339	1,575	397,523	505,737
		88	205	32,399	90,293	4,147	2,409	389,479	518,727

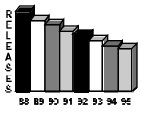


Table 5-12.

CAS Number	Chemical	Year	Transfers to POTWs Pounds	Transfers Off-site for Treatment Disposal/Other[30] Pounds	Subtotal Pounds	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Total Transfers[31] Pounds
71-43-2	Benzene	95	217,948	1,851,534	2,069,482	420,044	1,579,514	4,069,040
		94	210,855	2,350,341	2,561,196	555,346	1,657,760	4,774,302
		90	635,478	2,221,513	2,856,991	NA	NA	NA
		88	1,165,252	2,297,179	3,462,431	NA	NA	NA
56-23-5	Carbon tetrachloride	95	473	746,708	747,181	364,083	50,065	1,161,329
		94	574	1,223,623	1,224,197	850,623	17,314	2,092,134
		90	42,050	1,082,188	1,124,238	NA	NA	NA
		88	5,014	1,350,011	1,355,025	NA	NA	NA
67-66-3	Chloroform	95	418,401	1,650,873	2,069,274	175,944	103,428	2,348,646
		94	437,920	2,037,725	2,475,645	351,182	101,775	2,928,602
		90	802,260	1,321,651	2,123,911	NA	NA	NA
		88	1,226,573	1,368,275	2,594,848	NA	NA	NA
75-09-2	Dichloromethane	95	799,574	11,065,752	11,865,326	14,302,050	3,287,580	29,454,956
		94	824,942	11,834,407	12,659,349	20,830,077	3,766,871	37,256,297
		90	1,293,254	9,505,718	10,798,972	NA	NA	NA
		88	1,831,154	22,442,669	24,273,823	NA	NA	NA
78-93-3	Methyl ethyl ketone	95	502,492	6,055,721	6,558,213	23,732,285	42,506,199	72,796,697
		94	410,996	6,649,135	7,060,131	22,247,540	46,559,930	75,867,601
		90	891,591	21,034,820	21,926,411	NA	NA	NA
		88	964,168	29,258,802	30,222,970	NA	NA	NA
108-10-1	Methyl isobutyl ketone	95	398,689	1,679,129	2,077,818	16,264,345	18,040,099	36,382,262
		94	488,749	1,738,556	2,227,305	17,959,794	18,858,914	39,046,013
		90	1,259,294	4,599,709	5,859,003	NA	NA	NA
		88	1,509,030	10,509,270	12,018,300	NA	NA	NA
127-18-4	Tetrachloro-ethylene	95	14,996	2,043,768	2,058,764	6,585,432	1,094,487	9,738,683
		94	62,058	2,158,306	2,220,364	7,459,941	857,453	10,537,758
		90	450,922	4,548,481	4,999,403	NA	NA	NA
		88	558,691	5,582,693	6,141,384	NA	NA	NA
108-88-3	Toluene	95	849,352	21,892,389	22,741,741	24,457,543	76,070,848	123,270,132
		94	899,405	22,853,630	23,753,035	24,113,967	80,546,924	128,413,926
		90	1,769,459	40,562,359	42,331,818	NA	NA	NA
		88	3,593,521	62,128,954	65,722,475	NA	NA	NA
71-55-6	1,1,1-Trichloro-ethane	95	23,122	1,395,249	1,418,371	3,742,913	1,011,715	6,172,999
		94	6,454	2,579,432	2,585,886	7,017,946	1,848,618	11,452,450
		90	173,194	13,124,628	13,297,822	NA	NA	NA
		88	305,358	19,428,542	19,733,900	NA	NA	NA
79-01-6	Trichloro-ethylene	95	15,073	1,079,073	1,094,146	8,487,722	1,145,534	10,727,402
		94	50,325	2,838,850	2,889,175	8,294,181	1,203,719	12,387,075
		90	11,949	3,962,121	3,974,070	NA	NA	NA
		88	85,652	6,509,867	6,595,519	NA	NA	NA
	Xylenes	95	931,209	16,485,163	17,416,372	43,930,592	72,661,343	134,008,307
		94	712,558	10,337,829	11,050,387	40,153,871	78,895,568	130,099,826
		90	1,956,513	25,405,616	27,362,129	NA	NA	NA
		88	4,225,457	37,956,694	42,182,151	NA	NA	NA
	Cadmium and cadmium compounds	95	4,194	1,949,051	1,953,245	1,793,320	2,866	3,749,431
		94	3,018	2,093,733	2,096,751	2,673,297	2,717	4,772,765
		90	13,762	1,320,148	1,333,910	NA	NA	NA
		88	21,613	1,286,818	1,308,431	NA	NA	NA

Table 5-12. TRI Releases and Transfers of 33/50 Program Chemicals, 1988, 1990, 1994, 1995, Continued.[29]

CAS Number	Chemical	Year	Total Forms Number	Fugitive or Nonpoint Air Emissions Pounds	Stack or Point Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total Releases Pounds
	Chromium and chromium compounds	95	3,205	446,601	751,383	152,615	57,780	21,652,821	23,061,200
		94	3,243	645,983	531,982	179,872	38,109	21,800,804	23,196,750
		90	3,108	574,178	577,222	451,166	83,237	25,983,784	27,669,587
		88	2,448	626,325	701,374	401,219	54,902	40,215,263	41,999,083
	Cyanide compounds	95	285	275,401	3,278,202	89,619	5,082,794	15,133	8,741,149
		94	295	199,257	3,109,481	103,345	4,099,986	13,961	7,526,030
		90	370	240,948	1,721,580	129,669	4,981,412	19,720	7,093,329
		88	428	657,222	1,699,447	197,544	5,445,176	108,969	8,108,358
	Lead and lead compounds	95	1,639	735,144	1,297,578	64,753	912	14,683,521	16,781,908
		94	1,684	606,462	1,214,013	67,243	1,263	15,153,615	17,042,596
		90	1,914	908,756	1,387,079	133,540	1,648	18,985,861	21,416,884
		88	1,596	839,273	1,822,549	242,154	2,760	26,684,055	29,590,791
	Mercury and mercury compounds	95	34	10,698	5,613	328	6	1,016	17,661
		94	29	9,757	4,128	321	7	1,351	15,564
		90	63	14,793	8,756	809	21	4,199	28,578
		88	52	16,797	8,484	1,406	27	13,279	39,993
	Nickel and nickel compounds	95	2,658	253,843	336,794	76,732	113,506	2,662,954	3,443,829
		94	2,622	533,046	277,929	98,902	62,941	1,699,365	2,672,183
		90	2,357	395,022	326,891	152,262	268,958	5,094,379	6,237,512
		88	1,739	425,589	297,978	222,619	239,263	3,609,583	4,795,032
	Total for 33/50 Chemicals	95	21,576	166,253,968	311,487,848	973,662	7,892,884	39,454,864	526,063,226
		94	22,956	196,889,685	364,263,508	1,237,639	7,001,967	39,289,958	608,682,757
		90	28,139	359,285,114	592,316,788	2,547,074	8,747,212	52,228,369	1,015,124,557
		88	25,696	418,128,921	694,885,066	4,012,935	10,247,344	73,275,769	1,200,550,035
	All Other TRI Chemicals	95	39,354	135,955,818	558,953,013	34,820,593	128,858,740	225,796,768	1,084,384,932
		94	39,967	152,745,240	550,019,027	38,737,241	107,168,264	243,508,020	1,092,177,792
		90	42,229	207,275,764	663,419,709	103,548,645	151,142,197	343,336,163	1,468,722,478
		88	36,942	261,804,905	801,892,857	160,453,580	151,691,788	385,956,058	1,761,799,188
	Total for All TRI Chemicals	95	60,930	302,209,786	870,440,861	35,794,255	136,751,624	265,251,632	1,610,448,158
		94	62,923	349,634,925	914,282,535	39,974,880	114,170,231	282,797,978	1,700,860,549
		90	70,368	566,560,878	1,255,736,497	106,095,719	159,889,409	395,564,532	2,483,847,035
		88	62,638	679,933,826	1,496,777,923	164,466,515	161,939,132	459,231,827	2,962,349,223

chemical had the third highest release-and-transfer total of the 17 chemicals, by 1995 it had dropped to eighth.

The only chemical of the 33/50 Program which had an overall increase was cadmium and cadmium compounds. As Table 5-12 indicates, this increase resulted from transfers off-site. Transfers to POTWs and all releases for this chemical showed net decreases. All other metals in the 33/50 Program declined by 20% or more.

Waste Management Data, 1991-1995

Table 5-13 illustrates the change in the quantities of TRI chemicals undergoing each waste management activity from 1991 to 1995. The amounts for each year are taken from the Form R submitted for that year (from the "current year" column). In other words, the 1991 data were taken from the 1991 submissions, the 1992 data from the 1992 submissions, and so on. These tables exclude all data for ammonia, hydrochloric acid, sulfuric acid, delisted chemicals,

Table 5-12, Cont.

CAS Number	Chemical	Year	Transfers to POTWs Pounds	Transfers Off-site for Treatment Disposal/Other[30] Pounds	Subtotal Pounds	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Total Transfers[31] Pounds
	Chromium and chromium compounds	95	358,500	26,254,746	26,613,246	123,811,523	179,718	150,604,487
		94	429,629	21,546,720	21,976,349	146,670,124	94,980	168,741,453
		90	1,144,505	34,319,211	35,463,716	NA	NA	NA
		88	2,093,102	27,005,785	29,098,887	NA	NA	NA
	Cyanide compounds	95	240,813	608,670	849,483	24,708	3,773	877,964
		94	171,464	572,418	743,882	27,718	8,344	779,944
		90	141,644	1,303,818	1,445,462	NA	NA	NA
		88	1,162,724	2,719,177	3,881,901	NA	NA	NA
	Lead and lead compounds	95	58,334	27,795,707	27,854,041	351,135,515	68,930	379,058,486
		94	89,521	28,711,176	28,800,697	352,192,736	84,961	381,078,394
		90	192,992	56,954,412	57,147,404	NA	NA	NA
		88	213,674	31,062,065	31,275,739	NA	NA	NA
	Mercury and mercury compounds	95	24	225,685	225,709	58,206	505	284,420
		94	15	42,567	42,582	24,908	0	67,490
		90	311	213,305	213,616	NA	NA	NA
		88	1,892	274,767	276,659	NA	NA	NA
	Nickel and nickel compounds	95	179,866	10,574,362	10,754,228	100,382,663	7,189	111,144,080
		94	218,216	11,164,012	11,382,228	107,770,286	4,091	119,156,605
		90	318,358	16,257,819	16,576,177	NA	NA	NA
		88	904,816	13,890,061	14,794,877	NA	NA	NA
	Total for 33/50 Chemicals	95	5,013,060	133,353,580	138,366,640	719,668,888	217,813,793	1,075,849,321
		94	5,016,699	130,732,460	135,749,159	759,193,537	234,509,939	1,129,452,635
		90	11,097,536	237,737,517	248,835,053	NA	NA	NA
		88	19,867,691	275,071,629	294,939,320	NA	NA	NA
	All Other TRI Chemicals	95	149,648,930	358,884,818	508,533,748	1,421,656,483	267,842,666	2,198,032,897
		94	153,447,904	349,282,389	502,730,293	1,409,573,333	220,951,147	2,133,254,773
		90	223,267,960	464,399,015	687,666,975	NA	NA	NA
		88	234,855,234	523,130,916	757,986,150	NA	NA	NA
	Total for All TRI Chemicals	95	154,661,990	492,238,398	646,900,388	2,141,325,371	485,656,459	3,273,882,218
		94	158,464,603	480,014,849	638,479,452	2,168,766,870	455,461,086	3,262,707,408
		90	234,365,496	702,136,532	936,502,028	NA	NA	NA
		88	254,722,925	798,202,545	1,052,925,470	NA	NA	NA

and chemicals that were added in 1994 and 1995. In 1995, facilities reported total production-related waste of 19.9 billion pounds.

Information required by the PPA can help facilities and the public assess progress in pollution prevention and in the management of TRI chemicals in waste. The data can be used to analyze trends in total quantities of TRI chemicals in waste to see if facilities are reducing the amount of waste generated. The data also can be used to examine trends in the quantities of TRI chemicals undergoing each waste management method, to see whether facilities are moving up the waste management hierarchy. The PPA data can help the public assess which industries and facilities are implementing source reduction, which types of source reduction activities they

[29] Does not include delisted chemicals, chemicals added in 1990, 1991, 1994, and 1995, and aluminum oxide, ammonia, hydrochloric acid, and sulfuric acid.

[30] "Other" indicates: For 1994 and 1995, transfers reported with no waste management codes or invalid codes. For 1988 and 1990, transfers reported with no waste management codes, invalid codes, or codes not required to be reported in 1988 and 1990.

[31] NA: Transfers for recycling and energy recovery were not required to be reported until 1991. Therefore, total transfers in 1988 and 1990 are not comparable to total transfers reported for 1994 or 1995.

Table 5-13. Quantities of TRI Chemicals in Waste, 1991-1995.[32]

Management Activity	1991 Pounds	1992 Pounds	1993 Pounds	1994 Pounds	1995 Pounds
Recycled On-site	6,217,882,991	5,544,719,746	6,257,477,292	6,565,302,903	7,176,925,311
Recycled Off-site	1,752,017,474	2,087,429,591	1,995,454,098	2,191,460,110	2,214,135,775
Energy Recovery On-site	2,956,158,423	2,864,679,425	2,694,410,435	3,184,487,727	2,765,872,639
Energy Recovery Off-site	443,806,048	439,475,936	454,367,487	460,189,167	477,808,034
Treated On-site	4,351,264,670	4,527,788,422	4,416,800,754	4,526,552,695	5,004,993,890
Treated Off-site	435,888,428	403,749,389	366,117,363	373,501,380	400,359,231
Quantity Released/Disposed of	2,463,413,406	2,289,692,802	2,134,348,972	1,942,243,695	1,838,226,008
Total Production-related Waste	18,620,431,440	18,157,535,311	18,318,976,401	19,243,737,677	19,878,320,888
Non-Production related Waste	22,364,716	29,783,087	41,818,494	56,357,645	30,604,050
Management Activity	1991-1992 Change Percent	1992-1993 Change Percent	1993-1994 Change Percent	1994-1995 Change Percent	1991-1995 Change Percent
Recycled On-site	-10.8	12.9	4.9	9.3	15.4
Recycled Off-site	19.1	-4.4	9.8	1.0	26.4
Energy Recovery On-site	-3.1	-5.9	18.2	-13.1	-6.4
Energy Recovery Off-site	-1.0	3.4	1.3	3.8	7.7
Treated On-site	4.1	-2.5	2.5	10.6	15.0
Treated Off-site	-7.4	-9.3	2.0	7.2	-8.2
Quantity Released/Disposed of	-7.1	-6.8	-9.0	-5.4	-25.4
Total Production-related Waste	-2.5	0.9	5.0	3.3	6.8
Non-Production related Waste	33.2	40.4	34.8	-45.7	36.8

are implementing, and how they identified opportunities for source reduction. Information about how source reduction opportunities were identified can aid in determining the more successful routes of delivery for source reduction information and technology transfer. The PPA data do not allow for an accurate quantification of source reduction.

From 1991, the first year of PPA reporting, to 1992, the total quantity of TRI chemicals reported in production-related waste decreased 2.5%. Since then, however, total production-related waste has risen annually, for a net increase from 1991 to 1995 of 6.8%. Much of this change has occurred in recycling: an increase of 959.0 million pounds in on-site recycling over the four years and 462.1 million pounds in off-site recycling (15.4% and 26.4% increases, respectively). Facilities also reported on-site treatment 15.0% higher in 1995 than in 1991, an increase of 653.7 million pounds.

In 1995, non-production related waste (resulting from accidents or other one-time events) declined for the first time since PPA reporting began. Having risen from 22.4 million pounds in 1991 to 56.4 million in 1994, the quantity of TRI chemicals in non-production related waste fell to 30.6 million pounds, a decrease of 45.7% in the last year.

[32] Data from Form R of year indicated. Does not include delisted chemicals, chemicals added in 1994 and 1995, and ammonia, hydrochloric acid, and sulfuric acid.

Table 5-14. Actual and Projected Quantities of TRI Chemicals in Waste, 1991, 1994-1997[33]

Management Activity	1991		1994		1995		Projected 1996		Projected 1997	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Recycled On-site	6,217,882,991	33.4	6,565,302,903	34.1	7,176,925,311	36.1	7,234,495,234	36.2	7,454,991,265	37.0
Recycled Off-site	1,752,017,474	9.4	2,191,460,110	11.4	2,214,135,775	11.1	2,226,910,562	11.1	2,245,852,707	11.2
Energy Recovery On-site	2,956,158,423	15.9	3,184,487,727	16.5	2,765,872,639	13.9	2,808,820,021	14.1	2,766,631,126	13.7
Energy Recovery Off-site	443,806,048	2.4	460,189,167	2.4	477,808,034	2.4	465,510,797	2.3	460,788,644	2.3
Treated On-site	4,351,264,670	23.4	4,526,552,695	23.5	5,004,993,890	25.2	5,050,237,129	25.3	5,081,207,570	25.2
Treated Off-site	435,888,428	2.3	373,501,380	1.9	400,359,231	2.0	371,047,632	1.9	372,055,773	1.8
Quantity Released/ Disposed of	2,463,413,406	13.2	1,942,243,695	10.1	1,838,226,008	9.2	1,820,621,689	9.1	1,748,697,935	8.7
Total Production-related Watse	18,620,431,440	100.0	19,243,737,677	100.0	19,878,320,888	100.0	19,977,643,064	100.0	20,130,225,020	100.0

Table 5-14 shows the actual and projected quantities of TRI chemicals in waste for the baseline year of 1991 and for 1994 through 1997. Quantities for 1991 were taken from the 1991 reports, and quantities for 1994 were taken from the 1994 reports. Quantities for 1995 through 1997 were taken from the 1995 reports, where facilities report estimates for the current reporting year (1995) and projections for the next two years (1996 and 1997). This table, like Table 5-13, excludes data for ammonia, hydrochloric acid, sulfuric acid, delisted chemicals, and chemicals that were added for the 1994 and 1995 reporting years. (As indicated in the Introduction to this chapter, this explains differences between totals in these tables and those presented in Chapter 4.)

As discussed above, the total quantity of TRI chemicals in production-related waste has increased significantly since 1991. Facilities project that the quantity of TRI chemicals in waste will continue to rise, to 20.1 billion pounds in 1997, although at a slower rate (1.3% projected increase over two years). Facility projections for 1996 and 1997 show that facilities do not expect much change in how they handle their waste in the next two years. Recycling is expected to account for 48.2% of waste management in 1997, compared to 47.2% in 1995. Facilities project even less change in other waste management categories. The data indicate that facilities anticipate little or no progress in moving up the waste management hierarchy in the next two years.

Chemical-Specific Data

Table 5-15 presents release and transfer information for all TRI chemicals in the 1988-1995 "core" chemical list for which reports have been received in at least one year.

[33] Data for 1991 from 1991 Form R, for 1994 from 1994 Form R, all other years from 1995 Form R. Does not include delisted chemicals, chemicals added in 1994 and 1995, and ammonia, hydrochloric acid, and sulfuric acid.